January 1988 £1.25

AMSTRAD Computer User



The Official Amstrad Home Computing Magazine

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MASTERFILE III

FOR THE AMSTRAD CPC 6128 (ALSO CPC 464/664 WITH DK 'TRONICS 64K RAM)

FIRMLY ESTABLISHED ...

MASTERFILE III is now firmly established as THE filing system for the CPC6128. It has received rapturous reviews and we could paper the walls of our new offices with our customers' letters of appreciation.

For the benefit of newcomers to the CPC machines: MASTERFILE III is a powerful and flexible data filing and retrieval system. All "database" systems require that your data is organised into fields and records. Unlike most, MASTERFILE does not commit you to field lengths or formats, since ALL data is variable-length and optional. Files are not pre-formatted, and only used bytes are saved to disc. Also, unlike the rest, MASTERFILE allows multiple user-defined ways of viewing/printing your data. And unique in its price range, MASTERFILE offers RELATIONAL FILE options, whereby common data can be entered just once and shared by many records. Maximum field size is 240, maximum fields per record is over 50, and maximum file size is 64K. Room for 1,000 full names and addresses, for example. Only one disc drive is required. It is menu-driven throughout, and comes with detailed illustrated manual, and example files.

SO VERY VERSATILE ...

Just about ANY kind of information can be handled by MASTERFILE. You can EXPORT the data to other systems (e.g. PROTEXT/MERGE and TASWORD). You can even merge your own USER BASIC to MASTERFILE for customised file processing, or build new files from other computer sources. The speed of SEARCH of MASTERFILE is second to none. Records can be sorted ascending/descending, character or signed numeric, even embedded keys such as surnames. Other functions are field-to-field calculations, and several-across label printing. We simply don't have room to list all the features; give us a call if you are still in doubt of the power of MASTERFILE III.



Summary of Business Assets

Description	Maker	Model	Value
Microcomputer, 64K RAM + 32K ROM	Amstrad	CPC 464	£199.00
Microcomputer, 128K RAM + disc	Amstrad	CPC 6128	£299.00
Disc interface and 1st drive, 3"	Amstrad	DDI-1	£149.95
Dot-matrix printer 50cps 80col	Amstrad	DMP-2000	£159.95
Executive briefcase	Antler	AT0109	£42.00
Wire paper clip	British Steel	BWC	£0.01
Answering machine	British Telecom	BT2836	£185.00
Photocopier, single-feed	Canon	PC-10	£650.00
String, ball of	[illegible]	[illegible]	[illegible]
Executive jet aircraft	Lear	Cloud-Cuckoo	£5,200,000.00
Typewriter, electric	Olivetti	Leterra 36	£130.00
Dictation machine	Philips	510	£190.00
Coffee maker	Philips	HD5349	£30.00
Parcel scale	Salter	250P	£119.00
Microcomputer, 48K	Silicarn	Trumspec	£129.95
Letter scale	Waymaster	375KL	£10.00
Totals:			£5,202,294.26

Top record : 0001 [M] for menu

File FILE2 Records 0016 Selected 0016 Parents 0000 RAM used 02K from 64K

ALL THIS POWER ...

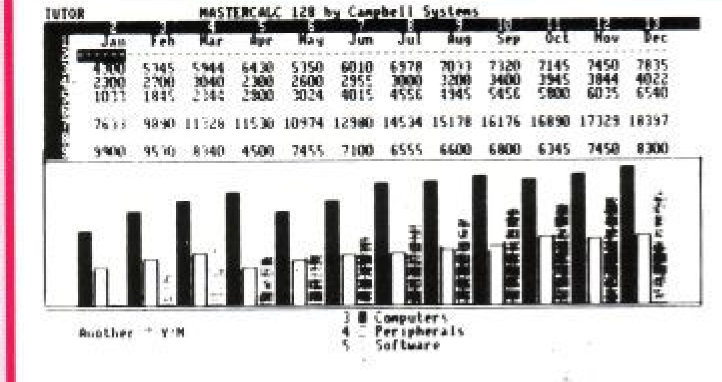
This is no toy thrown together in BASIC and half-tested, but real machine-coded computing power professionally constructed. We have had IBM and Apricot users beg us for a MASTERFILE for their machines — when they had seen the earlier CPC MASTERFILE. All this power is yours for ... £39.95.

For those who already have an earlier MASTERFILE, we offer updates; please telephone for details. You will be amazed at the performance improvements and extra functions.

***** PCW users: be patient, MASTERFILE 8000 will be ready early in 1987 *****

MASTERCALC 128 SPREADSHEET

We also have one of the fastest and friendliest spread-sheet programs around, MASTERCALC 128. Its special features include: individual tailoring of column widths and precision; relocatable formulae; split-screen option; automatic cursor advance; text output to printer, or to disc for interface with PROTEXT or TASWORD; hi-res graphic histogram of any three rows. MASTERCALC 128 runs on CPC6128, or CPC464/664 with DK'tronics RAM. The price is just £33.00



SPECIAL OFFER

You can save £10 by taking MASTERFILE III and MASTERCALC 128 for a combined price of just £62.95.

Prices include VAT and P&P to anywhere in Europe. Elsewhere please add 20% for air-mail service. ACCESS/VISA/MASTERCARD welcome, written or telephoned, quoting card expiry date. Make cheques payable to "Campbell Systems". Our normal response is return of post, 1st class.

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AMSTRAD Computer User

The official magazine for all users of Amstrad computers

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January 1988



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FEATURES

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ABC 63,599 Jan-June 1987

Utilities Unlimited!

We've brought together the very best non-games programs culled from past issues of *Amstrad Computer User*.

These clever programs cover animation, business, music, games hacks, and much more. Whatever your interest, there's something here for you – and at a very special price.

In some cases you will need to refer to the issue of ACU *in which the programs appeared. In the list below these are shown by ★ followed by the month. You can send for the eight issues at the special price of £6.60 by using the order form.*

Elite Disc Hack – add millions of credits or Elite status to your commander.

Justin's Scroll – discover how the experts program a scrolling landscape.

RSX Lister – list all RSXes including those which have been soft loaded.

Printer Spooler – carry on using the computer while the printer is working.

Epson Dump – produce hard copies of the screen display on the DMP2000/3000.

Organ – turn your micro into an impressive musical keyboard.

ZX Loader – load Spectrum binary files into your CPC. ★ *July 1986.*

Homespread – prepare your budget with this simple but flexible spreadsheet. ★ *May 1986.*

Amgraph – produce bar graphs, pie charts from a table of numbers. ★ *November 1985.*

Diary – bring some order to your busy lifestyle (disc only). ★ *May 1985.*

Mode 3 – Mode 0 with four colours in only 8k, with accompanying demos. ★ *January 1986.*

Animator – become the new Walt Disney. Built-in 'tweening' facility. ★ *April 1986.*

Trace – re-direct the trace output to a window or printer. ★ *December 1986.*

Sorcery Plus Hack – modify the sprites and increase your survival chances. ★ *January 1986.*

Chord Finder – learn the difference between a suspended and flattened chord. ★ *September 1985.*

Jet Set Willy Hack – infinite lives and a magic teleport facility. ★ *September 1985.*

Double Height Print – expand your horizons with these tall characters. ★ *September 1985.*

Tape price £7.95 Only £2.95 with a new subscription or subscription renewal

Disc price £9.95 Only £3.95 with a new subscription or subscription renewal

All programs work on Amstrad CPC 464, CPC 664 and CPC 6128 computers. You can list and adapt all the Basic files – an excellent way to improve your programming skills.

TO ORDER PLEASE USE THE FORM ON PAGE 73

NEWS

Computer User

Amstrad's take-away triumph



WITH his £399 Portable PC Alan Sugar surprised even the best-informed Amstrad watchers. The PPC is a Portable PC, which matches the specification of the PC 1512 – with a couple of important additions.

Designed for use in both the home and the office the new Amstrad is bigger than a laptop computer, like the Z88 or Tandy Model 100, but smaller than the Compaq portables.

It will run off batteries for up to eight hours, from an A/C transformer, a car cigarette lighter, a special expansion box, or an Amstrad PC monitor.

The machine is fully PC compatible, uses 3.5in discs, an 8086 processor at 8Mhz and comes with 512k or 640k of Ram.

The display is an LCD supertwist panel which will run standard IBM text displays and CGA graphics with four levels of stipple. A PC 1640 monitor can be plugged in to give a colour display.

BUILT-IN MODEM

One of the features which makes the PPC remarkable is the built-in modem, which runs at 300, 1200/75, 1200 and 2400 baud. It is fully Hayes compatible, which means that it will work with the majority of PC communications packages.

Modems to this specification often cost several hundreds of pounds by themselves. The PPC640, which has the modem and an extra 128k ram, costs just £100 more than the standard computer.

At 12lb the PPC is quite heavy, but it bridges the gap between lap-top and luggable.

Amstrad envisages the market as being distinctly yuppie – managers who have a PC at work and want to take the computer home or on business trips, or the salesman who needs to work out costings on the move.

The range looks like this:

PPC512 512k, one 3.5in disc drive, £399; PPC512 512k two 3.5in disc drives, £499; PPC640 640k, one disc drive and modem, £499; PPC640 640k, two disc drives and modem, £499 (all prices excluding VAT).

The new computer will be shown to the public at the Amstrad Computer show in January. Unfortunately – he says with a vested interest – even this remarkable machine failed to help Amstrad as shares tumbled in line with the rest of the stockmarket, to see the company value halved in less than a week.

All go in North

AFTER several successful northern events, the Amstrad Computer Show moved to G-Mex exhibition centre in Manchester for its October event. *ACU* sent Steve Gold along to investigate what was on offer...

After moving to the spacious environs of the G-Mex centre, the Amstrad Computer Show has a lot of space for exhibitors – and show-goers – to move around in, *writes Gold.*

Despite the chilly autumn weather, more than 70 exhibitors turned out on the day, to give the show-going public a run for their money.

Over on the Arnor stand, trade was brisk in the company's Protext word processing software for the PC and PCW series.

Arnor's sales and marketing manager Geoff Kipps-Bolton has a few plans up his sleeve for the coming months, including a premium version of Protext – Protext Professional – for about £129.95.

"Protext will continue to be available for the foreseeable future", he said, "but Protext Professional will have a lot of bells and whistles added to it".

Kempston Data unveiled its Jeeves desk-accessory package for the PCW series. The software runs concurrently with most CP/M programs such as Wordstar and Supercalc, and functions in a manner similar to Borland's Sidekick on the PC.

Jeeves costs £69.95 – which includes the cost of a Kempston mouse – and gives several on-screen accessories including disc management and operations access, a calculator, digital clock and calendar, as well as a 23 character by 12 line phonebook.

Micronet 800 was also attracting a fair number of CPC communications devotees with its new Cage Communications Rom for CPC users.

The £30 package – designed to work with a variety of CPC serial interfaces – gives the CPC communications capabilities mirroring software costing five times the price on other machines.

Also unveiled at the show was Mini Office Professional for the PCW – an enhanced version of the highly-successful Mini Office II package for the CPC. One of the many new features is an option for accessing Prestel.

Staying with the communications side of things, Bradford-based Pace Micro Technology was demonstrating its 1200 baud full duplex version of the Pace Linnet modem.



Busy at the show – Pace MD Barry Rubery

The £239.95 modem is fully Hayes-compatible and essentially an upgrade of the existing V21/23 Linnet

Supporting the Linnet on the CPC series, Pace was supplying the Amstrad CPC/Commstar interface for just £39 at the show – compared with a full retail price of £60.

Although that price was a show-only special, it's worth contacting the company to see what special offers it's doing on the CPC communications front.

Siren Software sold out of its CPC Eprom programmer. At £49.95, the unit can program 8 and 16k eprom (erasable programmable read

only memory) chips, but is limited to just 21v chips, rather than the complete range of CPC eproms.

Simon Cobb of Siren said that the unit offers good value for money, and comes with a separate power supply and software supplied on disc – tape-based CPC systems are unsuitable for use with the programmer, on account of their slow data transfer rate.

KDS Electronics announced the Mk II version of its £19.95 printer port add-on for the CPC range. The Mk II version uses the same hardware as the original, but comes with much-improved software capable of driving the 8 bit port, as compared with the CPC's standard 7-bit port.

The software now supports concurrent working with CP/M Plus and CP/M 2.2 programs. An upgrade path is available for users of the old software.

TRICKY LINE IN MAZES

Logotron attracted a lot of attention with XOR – its new maze game for the CPC series. This comprises 15 levels of mazes, which the player has to negotiate using a variety of logic, strategy and experience skills.

Players encounter a variety of obstacles with specific attributes – called Spricons – which interact in a devilishly cunning way.

XOR costs £9.95 for the tape-based version, and £14.95 for the disc-based edition.

PC owners were also able to take advantage of low-cost software from Logotron too. The company is now badging the US Spinnaker range of budget PC software under the Logotron brand name in the UK, and calling it the 1295 series, with titles retailing for the same number of pence.

Three packages in the £12.95 series are initially available – Filer 1295, a database, Planner 1295, a spreadsheet, and Writer 1295, a word processor. All three packages rolled together can be bought for just £29.95.

In use, the packages perform well – on-screen help menus provide an at-a-glance summary of features, while the command key interface on all three packages has the same structure, making it one of the cheapest PC combination packages around to date.



Tony and Neil Jacobs with £5m's worth of Bugatti

Rombo Productions was selling its PCW video digitiser at the show. Vidi-PCW won first place in the recent British Microcomputing Awards and looks excellent value at £99.95.

The company was also demonstrating a beta-test version of the digitiser for use on the PC1512 and 1640 series.

The overwhelming success of the Manchester Amstrad Show has created tremendous interest in the next one, to be held in the Great Hall in Alexandra Palace, London, from January 28-30. A money-saving advance ticket order form can be found on Page XX.

Domark winner collects

THE winner of Domark's Living Daylights competition was Neil Jacobs. Together with his brother Tony, Neil spent a day at Beaulieu National Motor Musem, complete with lunch and a going home present.

The cars there included the major milestones of motoring history and a number of forgotten but very interesting cars. The grounds are beatiful, so when the weather gets a bit better you should drag yourself away from the keyboard and pay a visit.

The place is a cross between a stately home and Disneyland so you don't need to be a car buff to enjoy it.

The editor decided that the car he would most like to own was the Ford GT40, while Tony fell for the BRM V16 racing car. Special thanks must go to the enchanting Donna at Beaulieu.

MicroLink expands service

A MASSIVE expansion of MicroLink, Britain's fastest-growing electronic mail service, is now being planned following the completion of a £1.3 million contract with Telecom Gold.

MicroLink – which has a special software section for CPC users – was launched in April 1985 as a means of encouraging people to start exploring the exciting new world of electronic communications.

It became an instant success, not only in Britain but in Europe, the Middle East and Australasia.

The MicroLink service is housed on a Prime 750 computer in Telecom Gold's top security London headquarters.

As part of the new deal, the service is being transferred to a machine that is four times more powerful – the Prime 9955.

"The phenomenal development of MicroLink has meant that we have now outgrown the computer that has served us so well in the last two and half years", said MicroLink chairman Derek Meakin.

"The new machine will give us much greater flexibility. It will allow us to provide a much faster service, introduce a variable charging structure to meet the different needs of our users, and make possible the installation of many new and exciting facilities".

LQ starts a battle

AMSTRAD has entered a legal battle with Epson over the designation LQ for the new LQ3500 dot-matrix printer. Epson claims that most people associate the letters LQ with Epson printers, while Amstrad contends that it is a generic term for letter quality.

Epson adds that its £1700 GQ3500 laser printer *(which incidentally is very good – Ed)*, could be confused with the high resolution LQ3500.

Epson has a range of three LQ printers, the LQ800, LQ1000 and LQ2500. They will soon be replaced by the superior LQ850, LQ1050 and LQ2500+ with the addition of a new baby printer, the LQ500. This should meet the LQ3500 head-on when it becomes available in January.

Epson feels that "Amstrad's switch from using their own letters and numbers to using a recognised Epson designation has forced us into taking this legal step."

The reference to Amstrad's own letters and numbers is a little odd: The previous nomelacture was DMP and was shared by many printer manufacturers.

Despite the angry letters from Epson the company has not, at press time, issued an injunction on sales of the LQ3500 so it is unlikely to become a collectors item.

FOR AS LITTLE AS £159 YOU CAN BE THE HOME SECRETARY.

There's more to home computers than fun and games.

Just add a printer (and the necessary software) and your computer becomes a word processor. And you become a very efficient secretary.

If the printer you add is the Amstrad DMP 2000 your efficiency will even extend to saving quite a lot of money.

Because the DMP 2000 costs just £159 (incl. VAT).

Yet it will print draft quality text at up to 105 characters per second. And Near Letter Quality at up to 26 characters per second.

As you would expect it is compatible with all Amstrad home computers. But it is also compatible with Epson and any other make that has the same Centronics Parallel Interface.

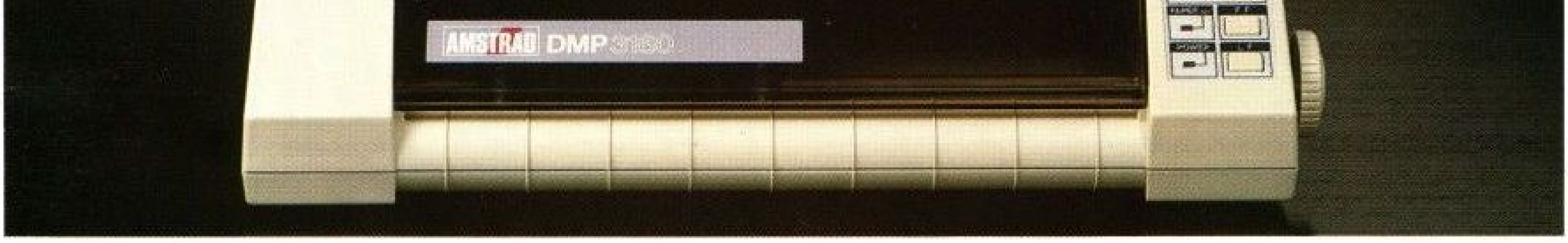


NEW

If you've already graduated to a PC there's the new Amstrad DMP 3160 printer.

It's compatible with all Amstrad PC's as well as Epson and all other IBM compatible PC's. It costs just £199 (plus VAT)*.

Both printers have easy front loading and both will take ordinary A4 paper. One of them is bound to be right for your particular home office.



Please send me further information on the DMP 2000 ☐ and the DMP 3160 ☐

NAME ______________________________

COMPANY ______________________ TELEPHONE ______________

ADDRESS ______________________________

AGU1

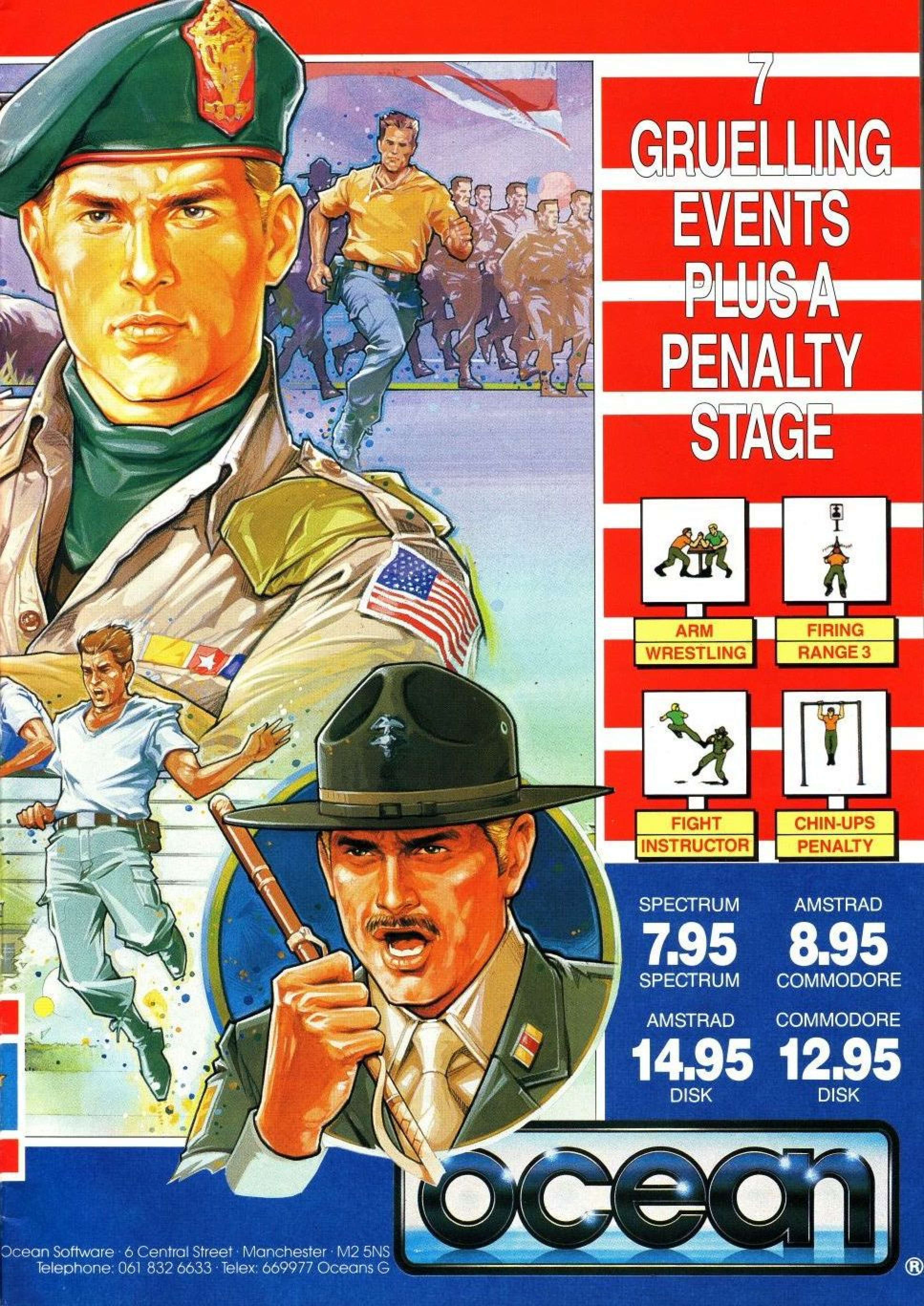
AVAILABLE AT: ALLDERS · COMET · CURRYS · DIXONS · LASKYS · JOHN LEWIS · AND GOOD INDEPENDENT COMPUTER STORES

*Recommended retail price including VAT, £228.85. Prices correct at 1-9-87 but may change without notice.

AMSTRAD

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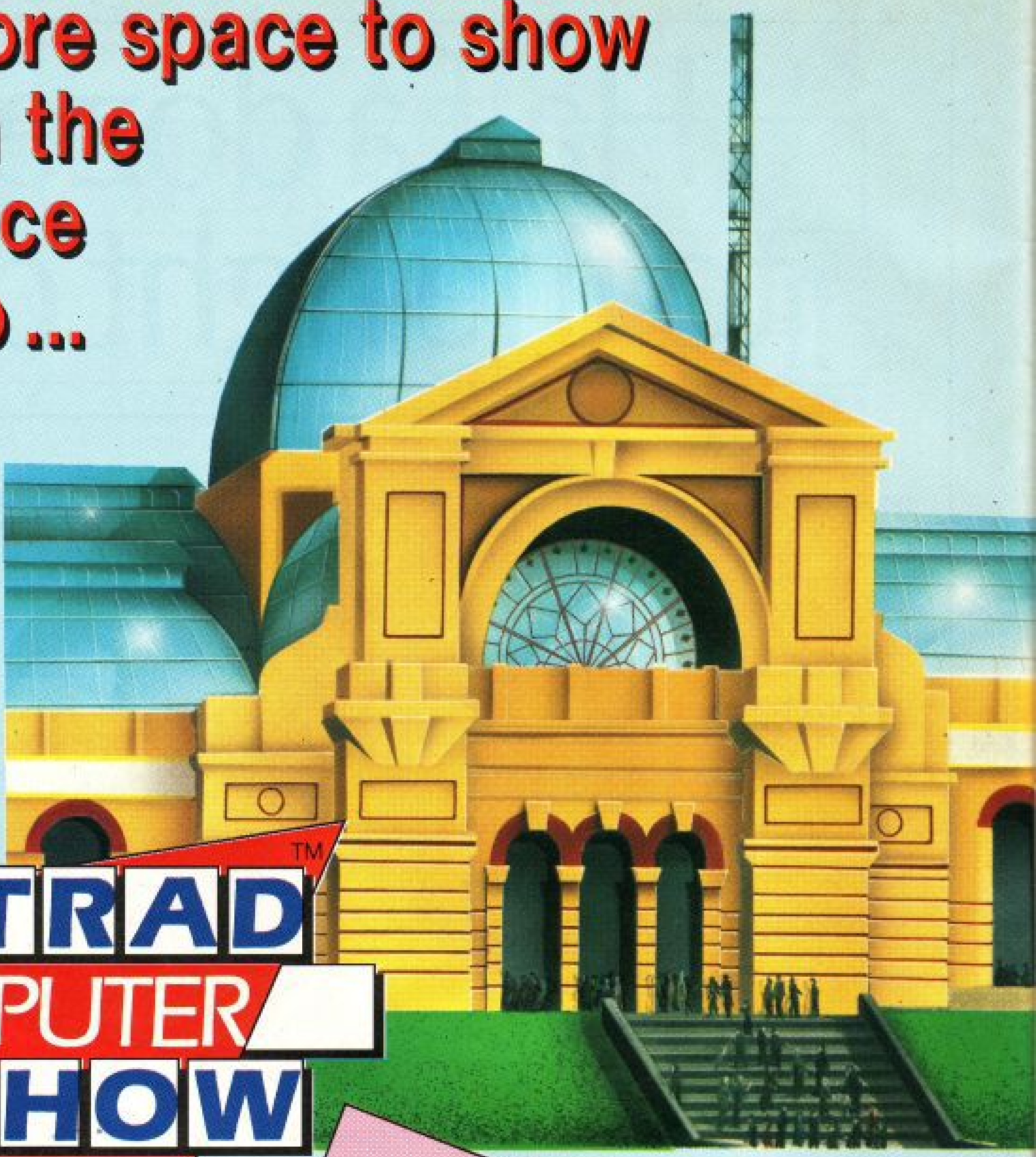
GALLUP SOFTWARE CHART

Pos	Move	Title / Publisher / Price	Comment	Last month	Market strength
1	Up	**Grand Prix Simulator** *Code Masters* 1.99	The racing game for those who know their opposite lock from a four wheel slide. Super Sprint by any other name would still play as sweet. This is a bargain.	2	100
2	New entry	**Pro Ski Simulator** *Code Masters* 1.99	A simple skiing game, fun and different. Good test of reflexes. You don't need to be Hans Klammer to understand what's going on.	NE	88
3	Up	**Dizzy** *Code Masters* 1.99	Flickery multi-room jaunt from the twins who wrote Grand Prix Simulator. Not up to previous number 1 standard, suffers from flickery sprites. Good fun all the same.	9	85
4	Up	**Joe** *Blade Players* 1.99	Mode 1 wander around the prison game. 2D sprites, includes a frustrating juggle-the-letters puzzle to prime a bomb. Well drawn but once finished never loaded.	19	78
5	New entry	**Renegade** *Imagine* 8.95	A game which has been brilliantly programmed by John Brandwood with graphics by Mark Jones, but lacks taste – horrific and violent.	NE	77
6	New entry	**Indiana Jones** *US Gold* 9.95	All that glisters, isn't. The arcade game which strives too hard to stick to the plot. Control an Indiana sprite and conquer the temple of doom.	NE	76
7	Up	**World Class Leaderboard** *US Gold* 9.95	Mmmaxx Headroom is obviously not the only computer golf fanatic, as yet another version of the evergreen game tees into the charts. New courses.	10	74
8		**BMX Simulator** *Code Masters* 1.99	Cycling simulator best played with a friend, a good, fun game with a low price. BMX may be on the decline but the memory kind of lingers.	4	67
9	New entry	**Soccer Boss** *Alternative* 1.99	Sports games always do well, particularly at low prices. If football is your game then this is for you. Look out also for Match Day II from Ocean, you'll be over the moon.	NE	66
10	Down	**Cricket International** *Addictive* 1.99	Bad timing bring this out just as the cricket season is bowled out. A good game, something to remind you of leather against willow until the summer *(what's summer – Ed)*.	1	65
11	Down	**Paperboy** *Elite* 8.95	This game was late out on the Amstrad due to strict quality control. Written by an ex-Vortex man it is the best conversion of the arcade game, even if it has no sound at all.	3	63
12	Up	**International Karate** *Endurance* 2.99	Yet another kick-your-opponents'-guts-out oriental style. Then serve up as number 44 with barbecue sauce. When you've a shelf groaning under the weight of fighting games who needs another?	20	62
13	Down	**Super Robin Hood** *Code Masters* 1.99	A nifty yet thrifty ladders and platforms game. Very addictive with good sound. The game has been around for a little while, but don't expect it to vanish from the chart too soon.	8	53
14	Down	**Transmuter** *Code Masters* 1.99	Very poor sideways scrolling shoot-'em-up. Surprising chart entry not up to Code Masters usual standards. There are plenty of better buys around.	12	52
15	Down	**Ghost Hunters** *Code Masters* 1.99	A spooky game by the same programmers as Grand Prix Simulator. It will be interesting to see what happens with the full price games from Code Masters.	6	49
16	New entry	**Saracen** *Americana* 1.99	Simple graphics but horribly addictive. This is a re-issue which failed to meet the praise it deserved the first time around. One of Justin the hacker's faves.	NE	47
17	New entry	**Dead or Alive** *Alternative* 1.99	A new entry which shows that budget is still as strong as ever. This chart used to be dominated by compilations, now the cheepies have taken over.	NE	44
18		**Deathwish III** *Gremlin Graphics* 9.99	Jack the Nipper with teeth. Excellent selection of weapons, large well-animated sprites. Ties in well with the film. Getting to grips with the controls is half the battle. Loads of blood.	14	37
19	Down	**Milk Race** *Mastertronic* 2.99	Good to see Mastertronic sponsoring sport, I would prefer to see more effort directed at the motor racing car sponsored by Mastertronic.	5	36
20	Down	**Park Patrol** *Firebird* 1.99	Once a full price Activision title, now more realistically priced. Good fun, non-hostile. Keep the park clean on land and lake, you play parkie in search of coke cans.	11	35

Non-mover · Up · Down · New entry

We needed even more space to show you all that's new in the Amstrad marketplace -so we've moved to...

The Great Hall
Alexandra Palace
Wood Green, London



AMSTRAD™ COMPUTER SHOW

10am – 6pm Thursday, January 28
10am – 6pm Friday, January 29
10am – 4pm Saturday, January 30

FREE presentations in the Amstrad Theatre

You can sit back in style and learn all about the latest releases for Amstrad computers – and get expert advice from some of the best brains in the industry. What's more, there's lots more seats than ever to meet the demand for this very popular attraction.

It's here!



This is YOUR chance to try out for yourself the new Amstrad portable – the machine the press is raving about!

How to get there

It's so easy to get to the show – by car, rail, underground or bus. Alexandra Palace has its own British Rail station, whisking visitors to and from King's Cross in just nine minutes. And there's a free bus service shuttling between station and show every 10 minutes.
If you're travelling by road the show is only 15 minutes away from Junction 25 on the M25 – and all car parking is free.

Cut the queues and save £1 per head – with this advance ticket order form

Advance ticket order

Please supply:

☐ Adult tickets at £2 (save £1) .... £ ....

☐ Under-16s tickets at £1 (save £1) .... £ ....

Total £ ....

☐ Cheque enclosed made payable to Database Publications Ltd.

☐ Please debit my credit card account

☐ Access / Visa

Admission at door: *£3 (adults), £2 (under 16s)*

Advance ticket orders must be received by Wednesday, January 20, 1988

AMSTRAD™ COMPUTER SHOW

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Alexandra Palace, Alexandra Park
Wood Green, London N22
January 28-30

Post to: *Amstrad Show Tickets, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.*

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APCW 11/87(1)

Lance Davis looks at letters and dishes out free software to the rest of the herd

Interface swap

I NOTE after reading recent issues of *ACU* that some of your readers appear to be experiencing difficulty in obtaining a DD-1 disc drive for their CPC464s. Presumably these drives are currently in very short supply and the latest reader to register such complaint in your November issue of *ACU* is a Mr.Mike Southey of Norfolk.

I purchased a CPC 464 just over a year ago and after two months usage supplemented it with a DD-1 disc drive.

However, wishing to progress to two drives operating with CPM+, I part exchanged my CPC464 for a CPC6128 and am now using the DD-1 – less the interface and cable – as my second drive: It works perfectly.

This would appear to indicate that the only difference between the DD-1 and FD-1 is the interface and cable which is supplied with the DD-1 at the time of purchase.

If I am correct, perhaps if Mr Southey – or any other reader experiencing similar difficulty – could contact me I am sure we could arrange something to our mutual advantage.

WH Davies,
10 St Maurice Court, Church Road,
Plympton, Plymouth,
Devon PL7 3NH

Transfer assistance

WITH reference to a letter from Tony Glazier from London and Invostat on disc/tape in the August letters.

I have been using this program successfully on my CPC464 and now on the 6128 from disc for three years now.

I transferred it from tape some time ago, and had the same problem as Tony, until I looked at the program. There I found a short block after the main program loaded from tape. This appears to be the cassette handling routine.

If Tony wants this tape version transferred to disc he can send me a blank disc and proof of purchase of the cassette version and I will send him a copy on disc – with a few minor enhancements I have made to the program to omit the cassette messages.

Arthur Scott,
25 Holland Road, Felixstowe,
Suffolk.

Calculating in assembly language

I OWN an Amstrad CPC 6128, which I can program in assembly language. There are some programs which I need to write which involve the use of quite simple arithmetical operations on floating point numbers such as multiply, divide,



square root, and so on, and functions such as sin, cos and tan.

However, I am completely hamstrung because I cannot so far discover from any source the addresses of the appropriate subroutines to CALL in the rom.

The CPC Firmware manual has a great deal of useful information, but none whatever about this particular field. I have written to numerous publishers and to Amsoft, but without success.

It is possible to write multiplication and division programs – and even programs to calculate sin and cos – following Zaks and others, but why be forced to re-invent the wheel when there are perfectly good subroutines lurking in the rom – if only one could discover their addresses, and which registers to load with what in order to use them?

I had none of this trouble when I used to own a Commodore 64. Using the Programmers' Reference Guide and Nick Hampshire's excellent book The Commodore 64 ROMS revealed, everything was quite simple and straightforward.

I am sure I am not the only Amstrad user who occasionally needs to use his micro actually to compute and would be glad of this information.

MW Peters,
Dorset

ACU *The floating point routines are not part of the firmware, but part of the Basic. I agree that you should be able to access them directly, but they are only designed to be used by Basic and so the support would be difficult. For this reason Amstrad refuses to divulge the entry points and conditions.*

Send your letters to:
Lance Davis
Letters Editor
Amstrad Computer User
169 Kings Road, Brentwood
Essex CM14 4EF

Survey surveyed

I WAS surprised to find from the report of the *ACU* reader survey (*ACU* October) that I am a typical *ACU* reader. I assume that he (95% correct gender, it appears) was well under 20 and played Zap the Wotsit ad nauseam.

As a middle-aged, so-called serious user of computers, I trust that the tendency to print more practical articles, – which I think I have detected already? – will continue.

May I pick on a small point from Simon Rockman's report to illustrate a general principle? He expresses surprise that Mini Office II and Tasword are more popular than Protext, a view that I have seen expressed before by professional writers.

There are two reasons for it. The first should be obvious – it is cheaper. The second is the point that I would like to take up: It is very much easier to use.

In the business world, it is impossible for a day to go by without hearing of someone who has been sold a computer system or software which is subsequently proves useless, or at least very much under-used, because no-one concerned can understand its complexities.

As a consequence many people are dissuaded from using modern technology when they could be benefiting dramatically from it.

It should therefore be no surprise that the better informed enthusiasts who read *ACU* should appreciate readily that Mini Office II is, while far from perfect, much more suitable for everyday use because of its relative simplicity.

Henson's Law of Software Design – formulated years ago in the days when I used to bother to ring up Spectrum programmers to give them a list of the bugs in their latest program can be stated as: "If you need to read the instructions to use the program, it is a duff program".

While this is a drastic simplification, it holds true more often than not. Mini Office II badly lacks on-screen help (as does Tasword, but Protext is difficult to use, even with a manual the size of War and Peace.

Its features may be of use to a professional writer, but they are an unnecessary complication in everyday use.

My trusty 464 + DK'tronics 64k ram, assisted by Mini Office II and Prospell – yes, very easy to use – does my word processing and prints my customer's accounts.

It also handles a practical Pharmacy Dispensing Program – written by myself, the commercial programs were too complicated and expensive – and plays chess in the quiet patches, among other things. I know people who have

DISCOLOGY NEW

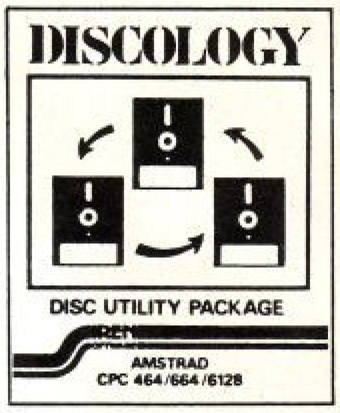
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* Exceptionally easy to use

The Explorer
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VISA

spent thousands of pounds and can do far less than I can with my inexpensive system.

May I appeal to any software writers who may read *ACU* to bear all this in mind when writing programs, whether for business use or for Zapping Wotsits.

I am sure that Mr Sugar, as a salesman par excellence, realises the value of simplicity, so how about a cheap computer that runs Basic so fast that we don't need machine code? The chips are on the way to do it!

R H Henson,
Tetbury, Gloucestershire

ACU *The chips may be on the way, they may even be cheap, but the large disc drives, banks of ram and sophisticated operating systems needed to work with them still cost a lot of money.*

That is part of the reason that the Archimedes is so expensive. Besides, programmers would still resort to machine code to make their programs even better.



Old stories

THERE are thousands of computer games around. Too many of them are the same old thing regurgitated with new shapes , colours and titles. It seems to me that computer software could be far more intelligent.

Programs which play chess, bridge and so on show how really intelligent computers can be. Would it not be possible for a computer program to generate original ideas or original art?

For example, programs to think up new designs for things? Or to compose new music – on synthesisers now – or generate original pictures? There are lots of possibilities for new kinds of software.

Its a pity that software houses are so obsessed with violent games and with making film titles into games.

We sometimes read that commercial games are short of new ideas and I couldn't agree more.



Please, software houses, we don't want all our software shops to be full of games based on fighting, stealing, murder and other crimes. There are dozens of more civilised possibilities.

Graham Steele,
Cumbria

ACU*: Games are works of fiction, and fiction works – especially films – abounds with recurring themes.*

Plots like Boy meets Girl range from Romeo and Juliet to The Blue Lagoon. Sequels rely on this – you know that our hero wins in all the odd numbered Rocky films and loses in all the even ones.

Yes, it is good to see an original computer game, but to expect them all to be a major leap forward is asking too much.

Eagle eyes

THE ESC and CTRL keys on the Arnold on the front cover of your October issue are the wrong way round and so are the COPY and Small ENTER keys. Where did the Ed have it serviced last?

What, in your opinion, is the best game around for pure, fast action? Your mag's neat and I've only missed two copies since Nov '85.

Richard Folds,
Devon

ACU *Well spotted. If you look carefully, the same machine was used on the November front cover, but it confused too many people in the office so we've swapped the keys back now.*

Best game of the moment – Trantor. I'm sending you a collection of games for being so observant.

Musical philanthropy

I WOULD be most grateful if I could use the pages of your fine magazine to alert your readers to a unique entertainment which I am able to offer.

I have prepared three collections of high quality classical music using Rainbird's superb Advanced Music System. These are complete performances of such well known works as Bach's Brandenburg Concertos, Mozart's Eine Kleine Nachtmusik, Mussorgsky's Pictures at an Exhibition, Vivaldi's The Four Seasons and many more.

Not only are these collections a fine example of what you can achieve with the Advanced Music System, with the computer plugged into a stereo hi-fi they are a superb demonstration of the Amstrad CPC's considerable sound capabilities.

Unfortunately, they are not standalone files, but require the presence of the Advanced Music System LINKER module. Also, of course, they are only available on disc.

If any Advanced Music System users are interested in my files they are invited to send me a stamped and addressed envelope for further details.

Rob Baxter,
50 Milton Grove, Whalley Range,
Manchester M16 0BP

More freebies

I WOULD like to make known to fellow Amstrad CPC users that I have written some software which I would like to offer to readers of your magazine free of charge.

The software consists of four programs which will all run under CP/M 2.2. Some work with CP/M Plus, which means that they may find considerable application with PCW owners too.

It is basically utility software which will aid almost anyone who uses CP/M for programming or merely for running application packages. As I am offering it totally free I therefore see no reason why it should be considered a profit

making exercise.

The software has been sent to numerous organisations who specialise in the Amstrad CPC Computers: Among those organisations who received it with great enthusiasm are Advantage, Amstrad CPC newsletter and Amswest.

At present I am composing some documentation about the programs which I hope will give readers the opportunity to find out what the software does. However, although I am offering this software *free*, I must ask readers to pay postage costs.

So, if readers would like to see further documentation. I must ask them to send me a stamp together with an envelope measuring approximately 9in x 4in.

Users who want the free software regardless of documentation should send me three first class stamps and a formatted 3in disc.

Mr.Allen Reavie,
22 Mourneview Street, Portadown,
Northern Ireland BT62 3AW

In praise of Sunderland

WITH reference to Mike Southey's letter in the November issue of *ACU* regarding his inordinately long wait for a DDI-1 disc drive, I would



like to endorse your reply regarding placing an order through the Amstrad User Club.

I too was in need of a DDI-1 to enable me to supplement my evening class studies of COBOL.

Hi-soft produces a version of this language for the CPC range – and very good it is too – but only on disc. Hence my need for a disc drive.

Cutting short my holiday (much to my wife's chagrin) enabled me to attend the Amstrad Computer Show at Alexandra Palace on 12th July. Making inquiries at the User Club's stand, I was told "Sorry – we've just sold the last one!" Typical I thought – bet they didn't have any in the first place.

Undeterred, I phoned most of the advertisers in your magazine only to be told "We'd sell you one if we could get them from Amstrad – been waiting months for a whisper of supplies forthcoming", and other similar comments.

Almost as a last resort I contacted the User Club by phone who seemed surprised at the lack of availability. I paid my subscription and placed an order for the disc drive and some discs on 21st July.

The discs arrived by return of post and the DDI-1 on 1st August – pretty good for a product supposedly in short supply, and at a discount which more than covered the £19-95 subscription to the User Club. And I'll get 12 "free" issues of your magazine!

Now I'm happily COBOLing away into the wee small hours (again, much to my wife's chagrin).

So Mr. Southey, join the club as soon as you can and reap the benefits.

R L Hornett,
Essex

ACU *It's great to find someone who takes the trouble to write when they are pleased with the service.*

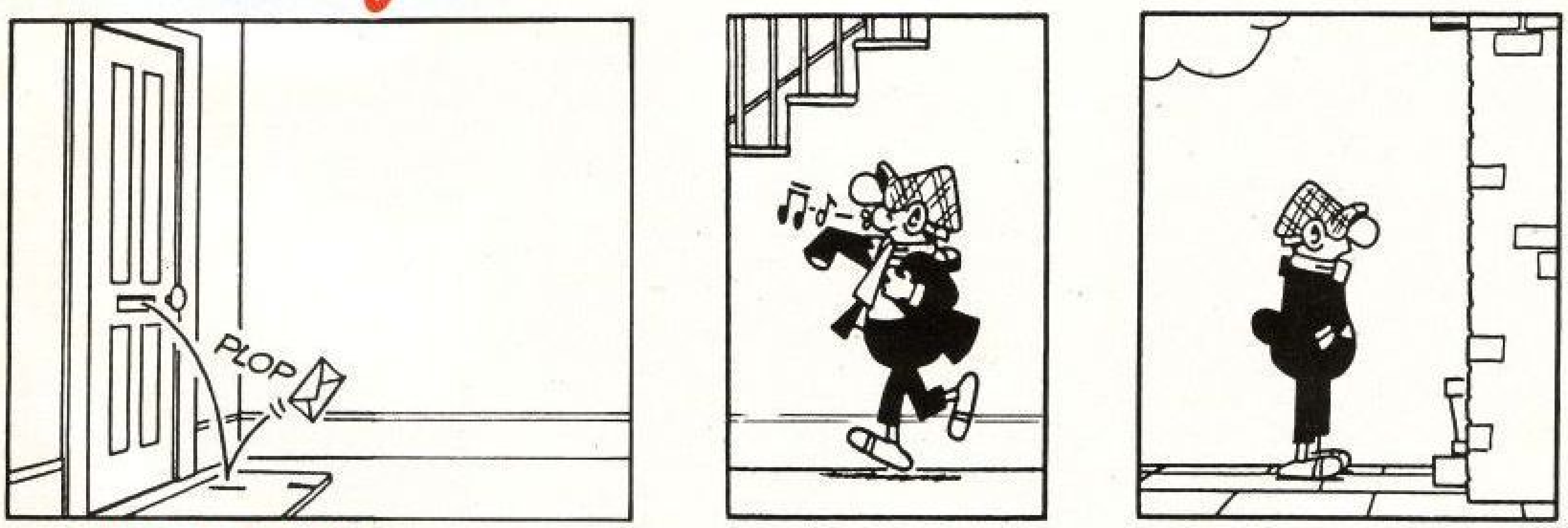
Late one evening...



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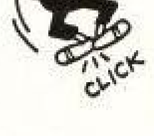


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Cartoons by Reg Smythe

Seek and ye shall find

Into adventures with Bill Brock

IN marketing the Graphics Adventure Creator for so many different computers, Incentive Software completed what Gilsoft's Quill had started, and brought the writing of adventures within the reach of almost anyone. Now GAC games is produced by a wide variety of software houses and probably provides the bulk of the adventures we play.

Incentive markets a number of titles under its Double Gold label – giving you two adventures for the price of one. The latest four releases (all for different machines) are the winners of a competition for GAC games, the Amstrad CPC winners being Nova and Haunted House.

THE action in Nova takes place many thousands of years in the future. The Sun has reached a point in its life cycle that means that it will begin the transition to a red giant. The initial stages of this process means that our old faithful Sol will go nova!

Earth has been aware of this for many hundreds of years and preparations have been made to transport all living creatures across space to another star system many light years away. The people have all been put into suspended animation and transported to the Moon.

Portions of the Earth have been sectioned off, stocked with wild life and blasted into space. The Earth's remaining core will be towed by enormous tractor beams behind the Moon on a 1000 year journey. On arrival at its destination, it is hoped that everything can be put back together again in more stable surroundings!

Everything appears to be going smoothly, Earth's millions are all in stasis on the Moon. A very small crew of technicians are on Earth, having started the final countdown and about to embark for the control centre on the Moon. Now is the most crucial time for the whole operation – and it is now that disaster strikes.

Thousands of years ago experiments were carried out to try to increase the life span of the human race by replacing parts of the body by biometal constructs. The experiment was a failure and the resulting creatures were paranoic and viciously opposed to mankind. These cyborgs were banished to the moons of Saturn where they have remained until escaping at this most inappropriate time.

You play the Chief Engineer in charge of the party on Earth. Surprised by the cyborgs, you are the only survivor. Although suffering from concussion, you realise the vital task you and your colleagues had to complete – you *must* get back to the Moon and complete your mission.

First you must gather together what objects you think will be useful and then get aboard the waiting space shuttle for the trip back to the Moon.

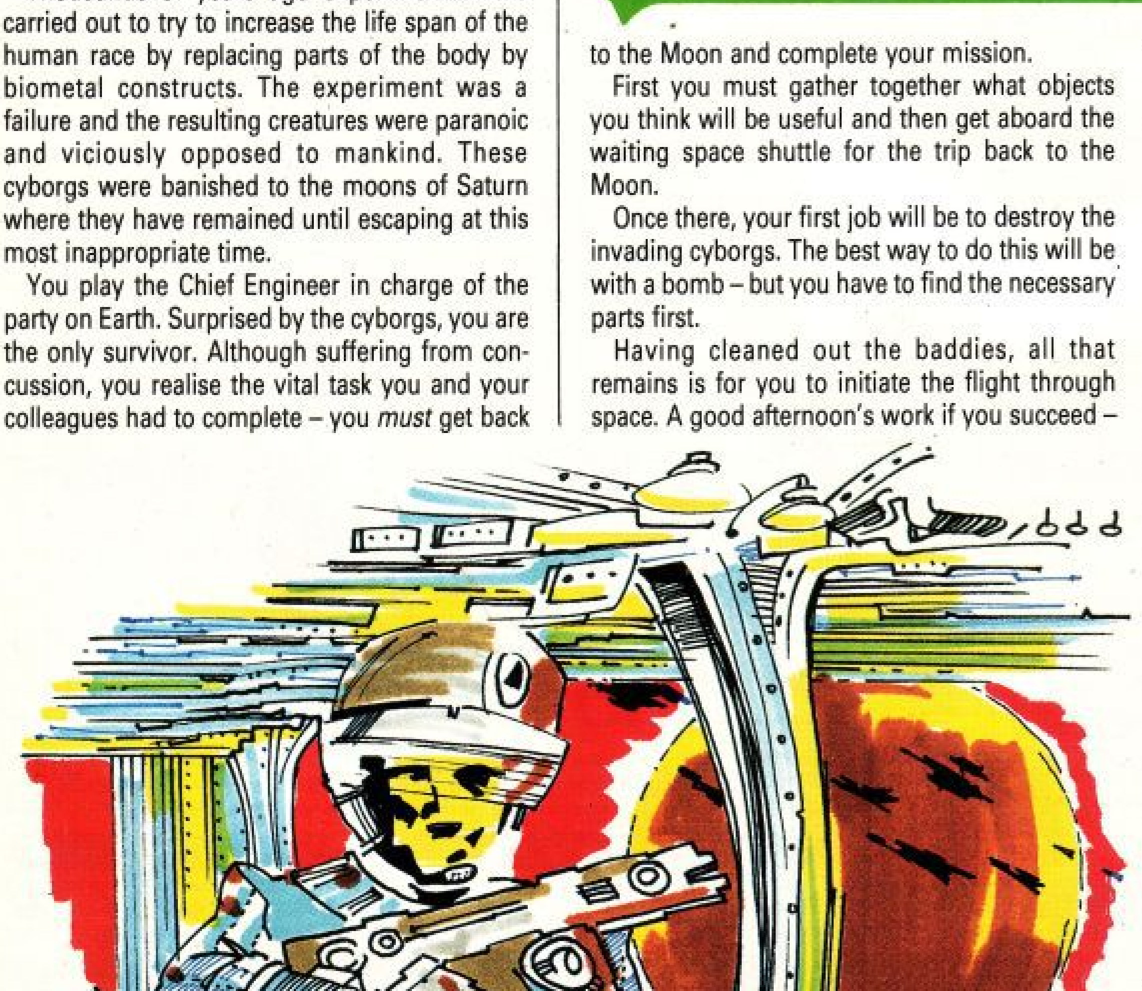
Once there, your first job will be to destroy the invading cyborgs. The best way to do this will be with a bomb – but you have to find the necessary parts first.

Having cleaned out the baddies, all that remains is for you to initiate the flight through space. A good afternoon's work if you succeed – or a permanent, terminal rest if you fail.

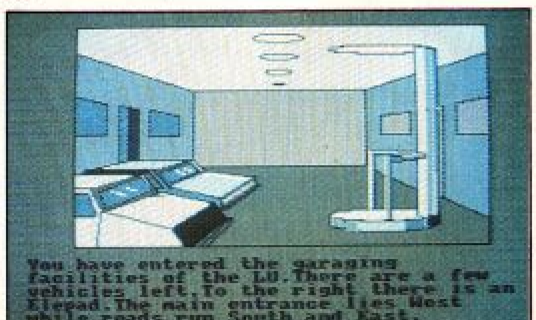
The basic GAC program has few faults, the most obvious being the limited parser. This can always be masked by good text, so that you are led into typing in the commands the programmer has foreseen.

Nova has been well planned, and although there are one or two commands that may cause a little frustration, its overall atmosphere, good graphics and logical problems make it a good game to play. There are plenty of objects to find, although some are excellent red herrings. There are 70 odd locations and two simple but effective mazes.

There are also a number of ways in which to









get yourself killed. Save your game position fairly often, so that you can learn by your mistakes and return quickly for another attempt to outwit the enemy. Read and memorise the opening sequence carefully and if you get stuck for a command, the following may help: PO/PGG NPOPSBJM, TXJUDI PO HMBTTFT, XFBS CSBDMFU and TUBOE PO FMFQBE.

ON the other side of the cassette to Nova is a great little adventure called Haunted House. You play the part of an old tramp who has sought refuge for the night in an old house. Once inside, the front door mysteriously slams shut behind him and your task is to get him out alive.

The scenario is straight out of the old fashioned House of Horrors found at most funfairs – anything goes – Dracula, Frankenstein, The Hounds of the Baskervilles, Werewolves, Snakes, a Mummy and even Mr Poe's Pendulum.

The number of locations is quite small (less than 30) and there are about 14 objects to find (less to use!). Most locations have graphics which are well drawn and help maintain the melodramatic atmosphere.

Although Haunted House is not difficult to solve, it may take you some time to get our poor, frightened tramp out in one piece. The puzzles are of the type where one object has to be taken to the right place to dispose of the creature guarding the next object in the chain.



Now this is all very well and good, and the clues are fairly obvious, but of course there are a couple of snags. You do not know in which order to collect things, but this becomes painfully obvious when you get killed for your ignorance.

Then there is the TORCH. The old tramp has a rather ancient, worn out torch and I suspect he must have fallen asleep with it switched on, because it will only last for about 80 turns. This is just sufficient for you to solve the adventure provided you do not put a foot wrong.

The modus operandi for this game has got to be: solve one section, save position, then solve the next and so on, almost certainly ending with a complete run through when you know *exactly* what to do and where to go. On the subject of where to go, several locations are not immediately apparent, so when you wander around, check in all directions. and, do not forget why the tramp first entered the house...



Haunted House may have you worried about completing it, but for all its unusual inhabitants your blood should continue running at its normal temperature. Not so with Infocom's chiller, The Lurking Horror.

SET in a modern American campus you play the part of a technology student setting out to write 20 pages for an end of term paper. Everyone else has also left things too late and the computer terminals in the dormitory building are all in use. He struggles through a raging blizzard to the computer building to use one of the computers there.

The adventure starts with you standing beside a very state of the art PC, on which you hope to



get your paper finished as quickly as possible. All the computers are networked, so you should be able to call up the work you have done so far and edit in the final passages.

After logging in, your paper appears on the screen, but has been strangely corrupted. As you try to read more of it you feel yourself being drawn into another place – a place where some demonic ritual is being enacted.

Eventually you pass out, to come to back in front of the PC. Was it just a bad dream? Were you really somewhere else?. Or was it a vision of what is to come? After all, there have been quite a few mysterious disappearances around the campus recently...

Your screen is now showing complete garbage, but a friendly hacker on the terminal next to you, will help you sort things out. Unfortunately your work has been lost, but he reckons that there has been a link up with some data from the Alchemy Department. Perhaps you should visit them to find out if your files are accessible there.

The George Underwood Edwards Institute of Technology may be a new campus, but some of the buildings have been built on or around older structures. As the blizzard is now worse, you are forced to use the underground passages that link the new buildings.

Below ground, rats are the least of your worries, and some of the things you find make your heart beat so fast it would challenge the clock rate of that super PC back in the terminal room.

Solving the adventure is no easy task. There are several ways in which to come to a sticky end, and the puzzles are up to Infocom's best, with some pretty devious (but fiendishly logical) solutions.

Of course you must try and find and end the lurking horror that is eating at the vitals of G.U.E. Tech. To this end a number of everyday objects will help you – there are also more unnatural items such as glowing stones and living/dead hands – vital to give an ending that leaves you alive but shaken.

Sadly only disc versions are available for the CPC and PCW. Infocom's adventure system has been thought highly of for years, although I have always had reservations about the parser and the continual disc access on nearly every command. There is no doubt that their games are of a very high quality, both in story line and packaging.

There is plenty of text to read and it sets the scene and maintains the atmosphere very well indeed. Sadly it also encourages you to examine things that are not included in its vocabulary, so you can get some pretty strange responses at times.

In the terminal room there are many signs, posters and banners on the walls, READ SIGNS gets the response "How do you do that with a signs?". Synonyms are sometimes conspicuous by their absence, try SWITCH ON PC and you get "there was no verb in that sentence!". You must use TURN ON instead.

I do not often criticise cheaper games for similar aberrations but when you pay more than £25 for what are supposed to be among the best games in the world, I feel that some improvement should have been seen over the course of several years.

There are other discrepancies. Multiple commands may be typed in. But take care: W,N,W will work and so will W,GET COKE. But GET COKE,GET CARTON will only get "You used 'get' in a way that I don't understand".

On the other hand, commands separated by full stops or THEN work perfectly. It may be easy to find fault with Infocom games but the faults are easily recognised and avoided once you are playing.

The old Infocom magic will still keep you glued to your computer as you try to fathom out what to do next.

I found some difficulty in starting when I wanted to use the PC. You are asked for a login code and subsequently for a password. The login code required, is found on the plastic Student Identification Card supplied with the game and the password is at the back of the Guide for Freshmen – the first letter is a U and not a V as it appears in the booklet. If you are held back by something locked BTL UIF IBDLFS BCPVU LFZT!

WITH almost a glut of adventures coming out over the last few months, we can look forward to a busy time at the keyboard on those cold winter evenings. This column will be reporting on as many as possible in the next few issues.

Level Nine's upgraded graphic adventure game system finally got past all those new fangled 16 bit machines and reached us on the old faithful Amstrad. Knight Orc and Gnome Ranger should certainly give all those suffering from Level Nine withdrawal symptoms something to chew over.

Software house Topologika have introduced some excellent text adventures by Peter Kilworth. Peter wrote a superb book on writing adventure games on the BBC Micro and some of his games are BBC classics. The first to feel the might of the CPC is the space adventure, Countdown to Doom. Amstrad conversions have taken some years to appear but I hope you will agree that it was worth the wait.

Two intriguing graphics adventures Killed Until Dead (US Gold) and Yes Prime Minister (Mosaic) both feature a joystick-driven system for controlling events and look as though they may well be the forerunners of many new adventure games.

Killed Until Dead gives you the option of several murder mysteries to solve and at first sight Yes Prime Minister seems to be a cross between The Archers and The Growing Pains of Adrian Mole. Both feature good graphics and should be interesting.

Infocom seems to be running wild, with almost an adventure a month, so look for comments on Stationfall as soon as I can get a space shuttle out to the deserted space station I and my pal Floyd the 'droid have to investigate.

1987 has seen more adventures on the market than any previous year, most of them playable, some of them destined to become classics. It will be interesting to see if the trend will continue into 1988.

The growing popularity of the Amiga and the Atari ST will probably mean we will have to wait for some conversions, but 1987 seems to have proven that we Amstrad users are still a force to be reckoned with. Long may it continue that way.

RATINGS

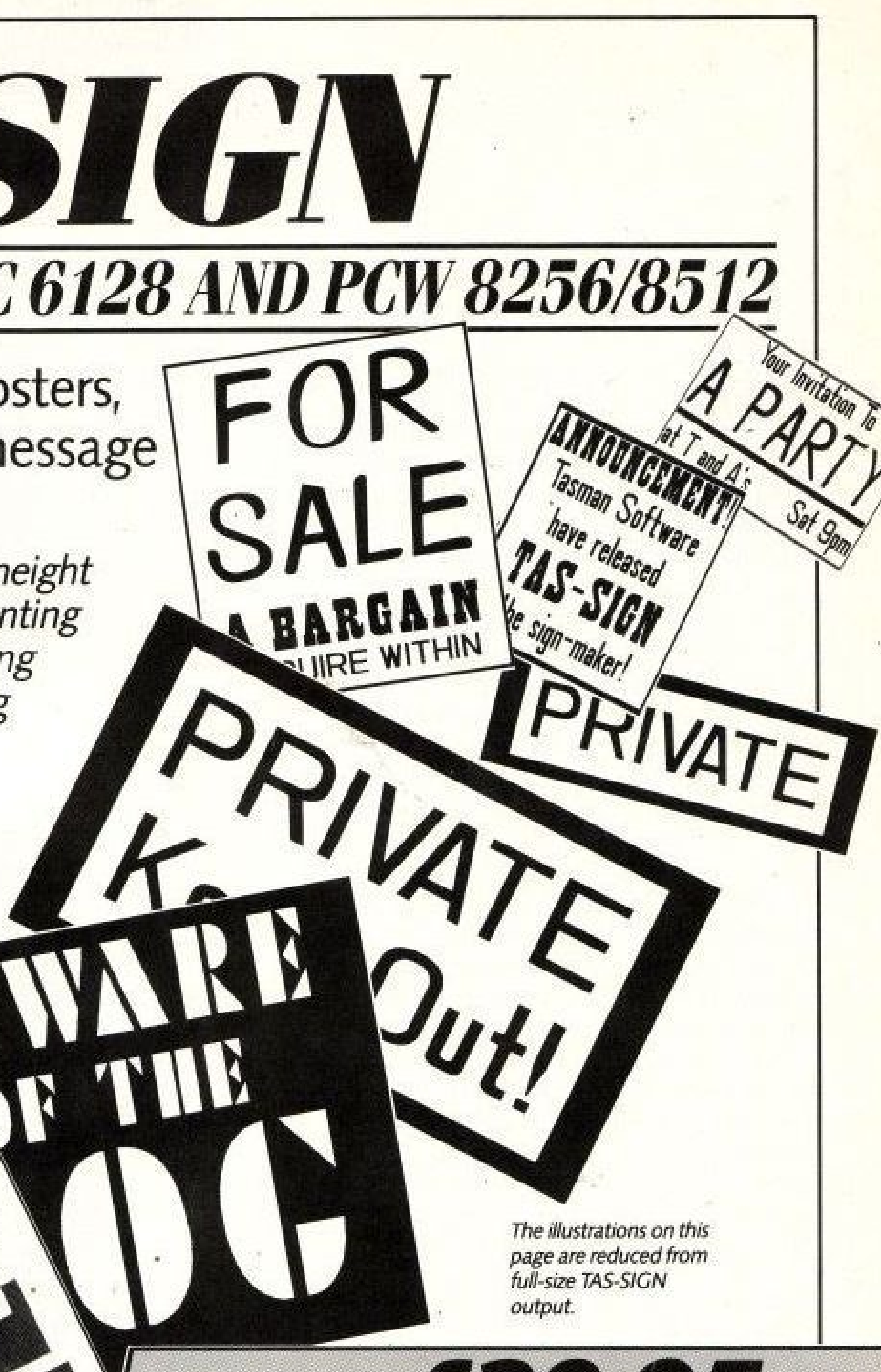
	Nova	Haunted House	Lurking Horror
Plot	62	55	80
Atmosphere	65	62	79
Addiction	65	65	80
Difficulty	60	53	80
Overall	64	62	80

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Basic Tutor

Defined functions

Jeff Walker looks to his Basic manual to brush up joys of Mallard he has missed

WHEN I first started programming in Basic on the CPC I took one look at the explanation of DEF FN in the manual and decided it was a really boring keyword for doing really boring things and quickly turned the page.

If that sentence sounds familiar then force yourself to read on as all will be revealed. Functions are really rather simple. Without resorting to counting I would hazard a guess that almost half the CPC's Basic keywords are functions. You can spot them a mile off because the keyword will always be preceded by an equals sign. For example:

(a) what$=INKEY$
(b) guess=RND
(c) value=PEEK(&8000)

Another thing all functions have in common is that they return a value of some sort. But, be it floating-point, integer, or string, a function will only return a single value.

In example (a) the function INKEY$ is invoked, and the string value returned from that function is assigned to the variable what$.

In example (b) the function RND is invoked and the floating- point value returned from that function is assigned to the variable guess.

In example (c) the function PEEK is invoked and introduces us to an important concept of functions – the parameter.

Most functions require at least one parameter, and it is always supplied in brackets directly following the function name. In this case, the function of PEEK is to look at a memory location and return the value that it finds there. Obviously we need to tell it where to look, and that is what the (&8000) in example (c) is.

So, let's define ourselves a simple little function to do something mildly useful – to pick a random whole number between 0 and 10:

DEF FNrandom = ROUND(RND*10)

The name after FN (in this case "random") is supplied by yourself, and follows the same rules as for other variable names, that is it must start with a letter, can include numbers and fullstops, can be up to 40 characters in length, and can be followed by a !, %, or $ to signify whether it is a floating- point, integer, or string function.

Once our function has been defined we can use it almost as if it is a new Basic keyword:

```
10 DEF FNrandom = ROUND(RND*10)
20 PRINT FNrandom,
30 GOTO 10
```

That's a simplified view of it. In practise you would be assigning the value FNrandom returns straight to a variable. Something like:

number = FNrandom

Now, before we go any further a very important rule to remember about using defined functions in Locomotive Basic is that the function must have been defined *before* the first call to it. I mention this simply because there are different rules for different languages. The Locomotive Basic rule doesn't restrict us in any way, but needs to be adhered to.

The best way to do this is to put all your DEF FN statements in one initialising subroutine and make the first line of your program a GOSUB to that routine. If you always do it this way you will never have any problems with Undefined Function messages.

Oh yes, and unless you are really pushed for space, never redefine a function to do something else; there is no restriction to the number of functions you can define, so, if you want a function to do a different job, define a new one in your initialising subroutine instead of re-using an old one.

Okay. Getting back to the programming, FNrandom would be much more useful if it was a little more flexible in the range department. In other words, instead of letting FNrandom pick a number between 0 and 10, wouldn't it be better if the top of the range was supplied as a parameter instead? Of course it would. That way we could use FNrandom in any program that needed random whole numbers between 0 and anything. Take a look at this:

DEF FNrandom(x) = ROUND(RND*x)

The (x) after FNrandom means we will have to supply a parameter when we invoke it. The actual variable name x is arbitrary. By that I mean it could be a, b, or whatever.

The important thing is that whatever variable name you use in brackets on the left-hand side of the definition should appear somewhere on the right-hand side because, whatever it is, that variable will be used temporarily by the function to hold the supplied parameter while it works on it. In this case it appears on the right-hand side as RND*x

Local hero

But whatever you call your variable, it will always be local to the function it is defined in. That means that if you have another variable of the same name elsewhere in the program it will be

unaffected by the function. A simple example will illustrate this local variable concept better than a thousand words:

```
10 x = 999
20 PRINT "X =";x
30 DEF FNrandom(x) = ROUND(RND*x)
40 PRINT "X =";x
50 picked = FNrandom(50)
60 PRINT "PICKED =";picked
70 PRINT "X =";x
80 END
```

If you run the above program you'll see that the value of the variable x set up in line 10 remains constant at 999 even though we use x in line 30 as the variable to hold the parameter passed to the function, which is invoked in line 50.

If you look at line 50 you'll see how a parameter is actually passed to the function. In this case the parameter is the number 50, but it could just as well be a number variable of any name – including x if you like. It could even be a long calculation like:

```
picked = FNrandom(guess*4+2*total/3)
```

As long as what is between the outermost brackets evaluates to a legal parameter for the function, the calculation can be as weird or complicated as you like: For instance you could use a function as the parameter:

```
picked= FNrandom(FNrandom(100))
```

would be perfectly legal. A line like that would first pick a random number between 0 and 100 – say 67 – then pick a number between 0 and 67 and assign it to the variable picked.

Always remember, however, that defined functions can't access variables in the program proper, they can only work on variables you've passed as parameters.

Parameters galore

You don't have to stop at a single parameter either. If fact you can have as many as you like. We could extend the portability of FNrandom further so that both the top and bottom of the range are supplied as parameters:

```
10 DEF FNrandom(lo,hi)=ROUND(RND*(hi
   -lo))+lo
20 picked = FNrandom(100,200)
30 PRINT picked,
40 GOTO 20
```

Here you give the number-range as the lower and upper limit (inclusive) separated by a comma. The above example picks random numbers between and including 100 to 200. You've got to admit that:

```
picked = FNrandom(100,200)
```

is far more understandable than:

```
picked = ROUND(RND*(200-100))+100
```

So far we've only looked at functions that return numbers. But you can also define functions to return strings. The principle is exactly the same except you should suffix the function name with a dollar sign. Thus, if you defined a function FNlf$ as:

```
10 DEF FNlf$(x) = STRING$(x,CHR$(10))
```

and then executed a line like:

```
20 PRINT FNlf$(25);
```

you would get 25 linefeeds printed to the screen, giving you a fancy CLS. The number in brackets after FNlf$ is the number of linefeeds that will be printed.

Again, that is a simplified example, but you can do clever things like defining a function to print a name on the screen with the first letter as a capital and the rest in lower case with a fullstop after it, no matter how the user inputs it:

```
10 DEF FNname$(x$)=UPPER$(LEF
   T$(x$,1))+ LOWER$(RIGHT$(x
   $,LEN(x$)-1))+CHR$(46)
20 INPUT "Type your name: ",i
   n$
30 PRINT "Thank you, ";FNname
   $(in$)
40 END
```

Although the function itself is of a certain type – either floating-point, integer, or string – the parameters you pass can be mixed.

As an example, here is a function that will pad out a string with a programmer-defined character to a programmer-defined length.

```
10 DEF FNpadleft$(text$,char$,size) =
STRING$(size-
len(text$),char$)+text$
20 PRINT FNpadleft$("Fred","*",10)
```

Notice that that the function itself is a string one, but the parameters are of both string and number type.

Functioning functions

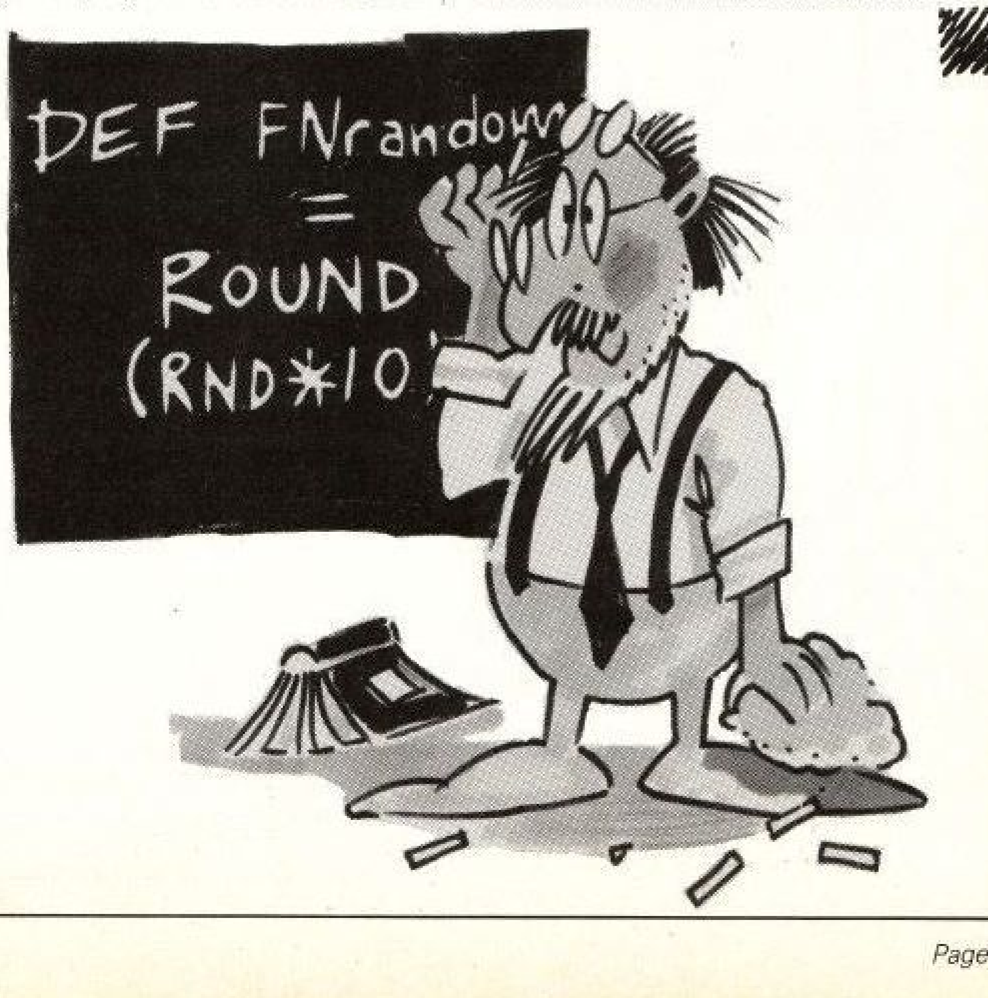
Finally this month, we've already seen how defined functions can use themselves or other functions as parameters, and although you can also use other functions in a function definition – which is totally mind-blowing so I won't confuse you with an example here – you can't use recursion with functions. In other words, a function can't invoke itself within a function definition. To see what mean, try this:

```
10 DEF FNhalf(x) = FNhalf(x)
20 PRINT FNhalf(1000)
```

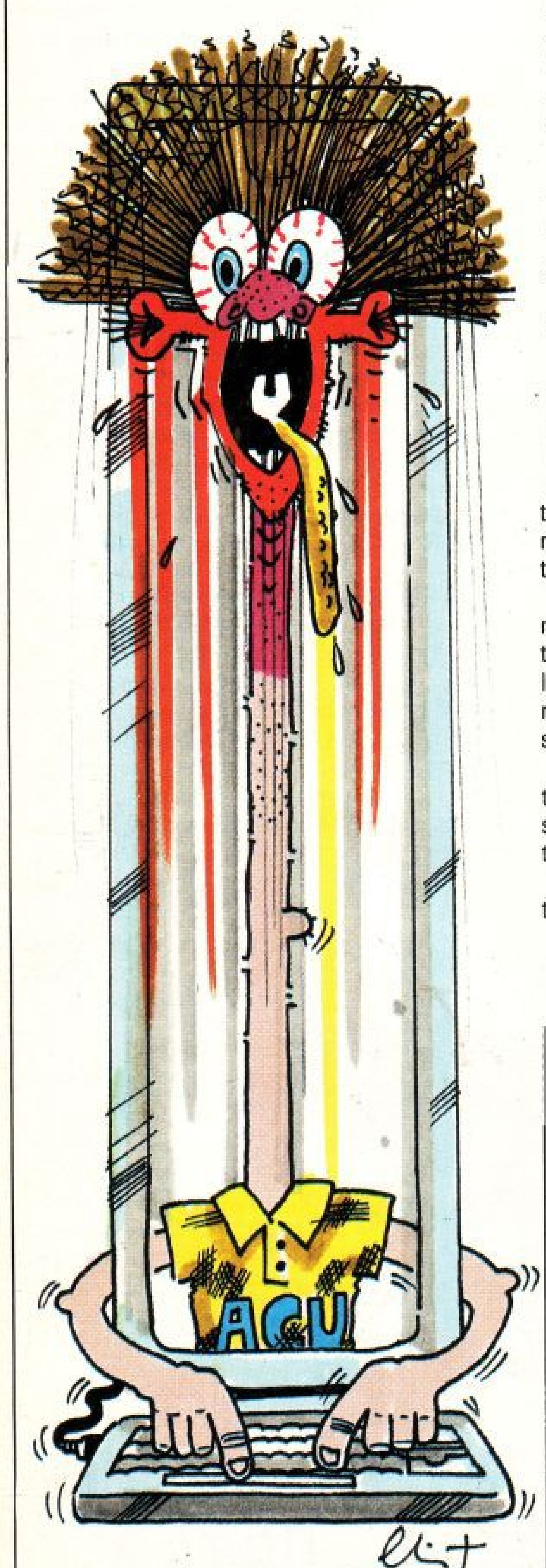
OK, logic tells you this is wrong anyway; it is merely a quick example of what happens.

On the first RUN it stops with a "Memory full in 20". This is due to something called stack overflow, which in this case is just your computer's way of saying "I've got my knickers in a twist".

If you try RUNning the program again straight away, your computer will commit suicide by resetting itself, which just goes to show that computers have feelings too. At times like this I keep my 6128 happy by feeding it chocolate digestives. Works wonders doncha know. Tarra.



BIG SCREEN



HAVE you ever looked at a PCW or BBC Micro and said: "That's a nice large screen, pity my CPC doesn't have one"?

Well, contrary to common belief it is possible. However, unlike the PCW or BBC, it's not as simple as picking a different mode number. ZZKJ adds a few lines.

IN Mode 1 the Amstrad can display a maximum of 1024 characters on the screen. This screen can be any rectangular size, as long as the height times the width is less than or equal to 1024. A Mode 1 screen is normally 40 wide by 25 high, which is 1000 characters. This is less than 1024, so all is fine.

If we want a screen that is 32 high, (the maximum visible height on a normal monitor), then its maximum width is 1024/32=32. Ah, problem: A 32 wide screen is not very useful, because most people are used to 40 character wide screens.

In Mode 2 – which is what most people use for text work – this would mean a 64 character wide screen, which is very limiting when you're used to 80, and so is totally unacceptable.

I set about trying to reduce the confinement of the CPC's screen. A bit of thought was required.

The complete image displayed on the monitor, including the border, is called the frame. The screen can be moved anywhere within this frame. However, if we could make the CPC display one screen at the top of the frame area, and another at the bottom, we would have 2 x 1024=2048 characters for our overall screen area, which would be more than enough for our needs.

However, we can only have one screen per frame. The frame is re-displayed (refreshed) on the monitor 50 times a second. So if we have a set of frame definitions for the top and bottom screens, we could flip between each of them every time the CPC displays a frame.

This would mean that each frame is only refreshed 25 times a second, but we would then appear to have one large screen consisting of two small ones. On most monitors this is not enough of a refresh rate, and so the monitor flickers terribly.

Blood 'n' guts section

As this section's title implies, it is a complete rundown of how it's done, and what does what. I shall assume good familiarity with the firmware, and a fairly comprehensive understanding of what the CPC is made of, and how it works.

However, having said that, I shall try to explain things in such a way that those of you who think you qualify for the above will stand a chance.

As I said in the instructions section, the actual size increase routine is fairly small. It is 131 bytes (including 10 for workspace) long and sits at 32768. It is initialised by calling 32768, and this initially gets the address in the lower rom of SCR GET LOCATION.

This jumpblock entry must not have been patched, otherwise when it strips off the lower rom enablement bit it will actually be losing an address bit.

This address is then burned into the code as part of a CALL instruction. The initialisation entry then sets up an asynchronous priority 15 event routine which does all the talking to the 6845 CRTC. (By using a near address, it means that I can legitimately use direct calls into the lower rom, because it will be enabled. I had originally intended to use an express event, but one of the 1.0 bugs meant that I couldn't).

The event routine has its own internal count so that it can be aware of which of the six frame interrupts it is within. This count cycles from 0 to 5, and the two frame defin-

There are two solutions to this problem:

- Get a special long persistance phosphor monitor which doesn't need to be refreshed as often as a normal one. This was the solution adopted by IBM for their PC's multiple windows problem. This also has a few problems: a) When you clear the screen, it takes a while for the image to fade from the monitor. b) When you scroll the screen, it looks disgusting. c) It would be somewhat foolish to expect you to go out and buy one of these expensive monitors.
- Yet more thought . . . The speed of the display is constant, which means that the display time for a frame is dependant on the frame size. We need two screens to get the total size we require.

We can only have one screen per frame, which means that we need two frames. However, each frame needs to be refreshed 50 times a second, but the time taken to display a frame is less if the frame is smaller.

So if we have two frames which are half the size of the normal frame, have a screen definition for each frame so that the screen in one will touch the screen in the other, and flip between the two definitions every time a frame is displayed; then we will satisfy all the criteria.

This is because a half size frame can be displayed 100 times a second. By flipping between two half size frames, each one will be displayed 50 times a second, which solves the flicker problem.

Big screen – small program

Two frames means two screens, which gives a total character limit of 2048 which is more than enough for a 40 by 32 screen which only needs 1280 characters.

Defining the two screens so that they meet means that we get a contiguous 40 wide by 32 high screen. (20 wide in Mode 0, 80 wide in Mode 2). So, this is (very basically) the solution to the impossible part of having a nice large screen display.

The finer detail is somewhat more complex, and can be found in the blood and guts section.

There is one drawback with having two screens: Memory usage. Each sceen requires 16k of memory, and there are only two places where screens can be put. (It's lucky that we only need two screens). They are 49152 and 16384. This means that HIMEM gets reduced to 16383 because we have to use both screen positions, and Basic can only use contiguous memory.

This leaves about 16000 bytes free for Basic and machine code, below 16384, and just under 7k free for machine code and RSX's above 35684. This is still quite a lot of memory when you consider that a BBC had only 8k left for Basic, machine code and anything else in its 32 row screen modes; and look at what was achieved!

Long listing

The machine code required to do all of the above is quite small (about 121 bytes), so why the huge 3k listing? Well, it's all well and good having done the impossible and made the big screen, but until we can actually use it, it isn't much use. That's what all the other code is for.

The other code enables you to use your CPC exactly the same as before. The only major differences are that text positions (and text windows) can go down to 32 instead of the usual 25, and visible graphics positions go up to 511 instead of 399. There are only two losses:

- The FILL command of the 664/6128 doesn't. Well, it sort of does, sometimes, if you are lucky, and in the right place on the screen so all in all, it doesn't.
- The copy cursor (The blob produced by SHIFT and an arrow key) doesn't appear in the correct place if you are trying to perform a copy in the lower 16 lines of the screen.

You will still correctly copy from where you have moved to, but the cursor blob will be nowhere near that point. In the top 16 lines it works fine.

All in all, don't use copy in the lower 16 lines unless you have to. It's always easier to scroll the screen until what you want to copy is in the top, move the typing cursor (arrow key without Shift) to the top, and then perform the copy.

If you want to know why they don't work read the blood and guts section.

The only other anomalies caused are by graphics trying to line up with text. Since text positions are relative to the top, and graphics positions are relative to the bottom they will not line up, since the top and bottom have moved relative to each other.

The simplest solution is to move the graphics origin up by 112 pixel positions. Of course, this will not be necessary for anything written to fully take advantage of the big screen. Accessing tape or disc will cause the monitor screen to go haywire. Don't worry, as nothing is being damaged, and it will settle back down as soon as the disc/tape operation has finished.

To get your big screen, just type in the listing at the end of this article. Run it, and after a brief pause it will start counting through the lines on the screen. If you have made a typing mistake, it will stop and tell you the line in which the error occurred.

It will also realise if lines have been entered in in the wrong order, but will still just report that the line has an error. Don't forget to save out the Basic once you've finished typing it in. (If your CPC reports "Memory Full" when you try to save out the Basic, don't worry. Just type in MEMORY 37999 and try again). If when you get it working, your screen seems unstable or starts to roll, try tweaking the vertical hold control.

itions are sent on interrupts 0 (at the start of the frame), and on interrupt 3.

The routine checks the frame flyback pulse, and it uses this as re-synchronisation so that it can recover from missed interrupts (due to disc or tape accesses).

When interrupt 0 occurs the current value for the screen offset is obtained from the firmware, so SCR SET OFFSET must be used if you want to alter the screen position.

SCR SET BASE has no effect, because the concept of a base address is now meaningless. This is because register 12 (Start Address MSB) is used by the service routine to flip between the two screens.

The other registers used are 4 (Vertical Total), 6 (Vertical Displayed), and 7 (Vertical Sync. Position). Consult the Motorola data sheet for detailed explanations of the registers and the usual values that they are allowed to hold.

However, for what gets done here, you have to throw out all the usual rules about legal ranges for the registers. This is what initially held me up – I was only trying legal values. Using legal values means that you can successfully split the screen, but because the 6845 is trying to have a frame flyback between them, you get a thick band between the two frames.

However, by sending an illegally large value to register 7 for the top frame the 6845 gets confused into omitting frame flyback, which gets rid of this band, and it just joins the top screen into the bottom if you position them correctly.

Join up

Control is still maintained over the vertical position of the screen, because once the screens have been joined together the legal value sent to register 7 for the lower frame alters the position of both screens.

To ensure that this joining operation works, the value used for register 6 in the top frame needs to be enough to cross the register 7 positioning of the bottom section and the top



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Blood 'n' guts section

section so that it can reach the lower screen. Making it larger than the upper frame size (another illegal value) will do this.

Although we want equally sized upper and lower sections, an offset for the frame size has to be taken into account. The frame size totals must also reach a magic total. This total is not always 38 (which is what you would expect). In this case the total is 37, with the top section having a size of 15 and the bottom section having a size of 22.

Another anomaly involves the screen addresses. They need to be swapped so that the bottom screen's address is sent in the top frame's definition, and vice versa.

If we want to start playing around with the values, there are a few rules to bear in mind. The value for register 7 in the bottom frame becomes VERY fussy as the difference in frame size increases. With very different sizes, the value can only be the value sent to register 6 for the bottom frame, or one less.

Screaming pitch

The full set of rules can get quite complicated when we have more than two frames, because inter-dependancy problems increase. Since we were only concerned with increasing the screen size, I shall not go into further detail; but be careful when playing around, because if a value is out by one – the 6845 may get sufficiently confused so as to hang the bus, thereby crashing the processor, and it will also stop displaying an image so your monitor will SCREAM!

The screen needs a total of 32k (16k per frame), because of the way that the 6845 accesses memory. For each character, there are eight raster lines in its height. Each line starts at a 2k offset from the previous one; the first one starting at the Start Address (value put into register 12,13).

The address counter is a 14 bit counter, which means that it wraps at 16k boundaries. The raster line divisions are fixed at 2k intervals because 16/8=2, and 8 is the normal value used. Therefore, if we have more than 2048 bytes per line we get wrap where the bottom starts to display the top again.

If you have more than 1024 Mode 1 characters you get wrap. This is why both frames use 16k, although at any one time, only 5/8ths of this memory is used. When we take hard scrolling of the screen into account all of this memory does get used.

Praise for Locc motive

Right, now we've covered the impossible part; it's time for the difficult part – the operating system patches. It's a tribute to the original programmers that this was possible in such a small piece of code. I say small, because 2.5k of code to handle all the text and graphics and quite a few of the SCR calls is quite good.

However, because certain calls weren't indirections, it meant that the text handling had to be just about taken over completely. So I took it upon myself to make a few improvements.

The first is only an improvement if you have 1.0. It is the control code disablement feature mentioned on the bottom of page 15.63 in the 464/664/6128 Firmware Manual (Soft 968). The second is individual control code buffers for each of the eight text streams. The third is the implementation of proper cursor management rules.

The CPC O/S uses pre-validation all of the time. This is wrong. We only pre-validate when we are going to use the cursor position, that is printing a character; although the cursor is moved by side-effect of printing the character.

However, anything that actively moves the cursor (regardless of whether it reads the cursor position beforehand) must not pre-validate. However it must post-validate so that it leaves the cursor in a legal place, and so that a control code that would cause a scroll causes the scroll immediately.

By using these cursor management rules we cure the double line feed problem without using any flags. This is the problem whereby we print a character at the right hand edge of the window and then print a CR/LF. The cursor has now moved down two lines instead of one. Well, I don't like that occurring so I stopped it.

Intercepted

All TXT, GRA, and SCR jumpblock entries that are dependant on screen configuration have been intercepted or replaced if they needed to be. There are only three that haven't. GRA FILL (of 1.1/1.2) is totally self contained, and doesn't call any of the plot or test indirections, so it doesn't work properly.

To have a working fill routine would therefore require me to copy the fill routine out of the rom and make the few changes necessary. There are two reasons why I didn't do this:

- 464 owners don't have the fill routine in their roms, and so I would be in breach of copyright by giving it to you.

```
10 ' 20/40/80 BY 32 SCREEN ROUTINES Printed
   by ACU
20 MEMORY 16383:ON ERROR GOTO 100
30 l%=13:s%=&7FFF:i%=120:GOSUB 60:PRINT"Eve
   nt routine DATA OK"
40 l%=285:s%=&8083:i%=270:GOSUB 60:ON ERROR
   GOTO 0
50 CALL 32768:CALL 32900:MODE 2:FOR n%=0 TO
   7:PAPER #n%,0:PEN #n%,1:NEXT:END
60 FOR n%=0 TO l%:t%=n%
70 FOR f%=1 TO 9:READ a$:a%=VAL("&"+a$):t%=
   t%+f%*a%:POKE s%+n%*9+f%,a%:NEXT
80 READ a$:IF HEX$(t%,4)<>a$ THEN 100
90 PRINT"Line";i%+n%*10;"OK":NEXT:RETURN
100 PRINT"Data error in line";i%+n%*10:STOP
110 ' Machine code for the 32 row screen ev
   ent routine
120 DATA 2A,0C,BC,CB,BC,22,57,80,CD,17B0
130 DATA 19,BD,AF,CD,3A,80,21,7A,80,142E
140 DATA 11,1C,80,01,00,9F,C3,E0,BC,187A
150 DATA C9,3A,79,80,3C,FE,06,38,01,0DBE
160 DATA AF,32,79,80,CC,55,80,CD,3A,166E
```

```
170 DATA 80,3E,F5,DB,00,1F,D0,3E,05,0FD3
180 DATA 32,79,80,C9,B7,21,67,80,28,1260
190 DATA 06,FE,03,C0,21,70,80,7E,B7,1636
200 DATA C8,06,BC,ED,79,04,23,4E,ED,14F3
210 DATA 49,23,18,F1,F5,CD,00,00,3E,1069
220 DATA 20,B4,1F,32,6E,80,F6,20,32,1159
230 DATA 77,80,F1,C9,04,0F,06,10,07,08D0
240 DATA 28,0C,10,00,04,16,06,10,07,01FD
250 DATA 12,0C,30,00,00,00,00,00,00,00C7
260 ' Machine code for the firmware patch
   routines.
270 DATA DD,21,51,81,01,FF,1D,DD,6E,15A6
280 DATA 00,DD,66,01,E5,DD,5E,04,DD,170F
290 DATA 56,05,ED,A0,ED,A0,ED,A0,E1,216E
300 DATA 36,C3,23,DD,7E,02,77,23,DD,143C
310 DATA 7E,03,77,11,06,00,DD,19,10,09B2
320 DATA D9,21,FF,81,01,FF,10,5E,23,10BB
330 DATA 56,23,3E,C3,12,13,ED,A0,ED,1904
340 DATA A0,10,F2,CD,B1,BB,22,14,88,14FE
350 DATA 11,3F,82,E5,06,20,1A,B6,77,1124
360 DATA 13,23,23,23,10,F7,E1,D5,DD,1C05
370 DATA E1,06,20,11,02,00,23,DD,CB,10A5
380 DATA 01,7E,28,0A,DD,7E,00,77,23,0DE0
```

```
390 DATA DD,7E,01,77,2B,19,DD,19,10,0C94
400 DATA EA,21,20,8B,22,44,8B,2A,37,0D13
410 DATA 85,23,23,23,22,37,85,0E,00,07D5
420 DATA CD,15,B9,0C,C8,FE,80,20,F7,1A6C
430 DATA 2B,7C,B5,DD,21,9F,82,28,04,1017
440 DATA DD,21,A5,82,DD,7E,00,32,B8,1474
450 DATA 87,DD,7E,01,32,B9,87,DD,5E,1708
460 DATA 02,DD,56,03,3E,FF,CD,40,81,1631
470 DATA DD,5E,04,DD,56,05,3E,C7,21,100C
480 DATA AB,82,01,E7,07,ED,B1,E0,BE,1D99
490 DATA 20,FA,72,2B,73,18,F5,B4,BB,19E1
500 DATA 19,83,6B,83,B7,BB,B4,83,F2,1DFE
510 DATA 83,90,BB,91,84,9E,84,96,BB,1B57
520 DATA A1,84,AF,84,9C,BB,B2,84,CA,1D65
530 DATA 84,66,BB,D6,84,36,85,75,BB,18A9
540 DATA 50,84,80,83,0E,BC,AB,82,FE,1B58
550 DATA 82,50,BC,CD,85,F0,85,4D,BC,1B86
560 DATA 1B,86,5A,86,17,BC,10,87,16,0EB3
570 DATA 87,1A,BC,19,87,1C,87,1D,BC,11F1
580 DATA 1F,87,22,87,5F,BC,25,87,28,10B4
590 DATA 87,62,BC,2B,87,4F,87,44,BC,1535
600 DATA 55,87,83,87,4A,BC,86,87,89,17B6
```

Blood 'n' guts section

● Most people replace the fill routine with one that is best suited to their purpose, and it would be a waste of sacred page 2 memory to have two fill routines in it. Any fill routine that uses the jumpblocks to calculate the screen address of lines from co-ordinates should work – once it has been told that it has 255 pixel lines (511 in standard or user co-ordinates) available. This is necessary because... SCR NEXT/PREV LINE has not been modified.

This is because the routine becomes painfully slow when it has to check for crossing between the two screen sections if the screen offset is not 0.

It becomes quicker to simply re-calculate the screen address from the coordinate (which the routine isn't given, so it can't do it).

The best compromise is to calculate the screen address of each character square as you move down/up the screen and to call SCR NEXT/PREV LINE to move down/up the eight lines within the character square, or to keep a count of where you are, and perform the re-calculation when you need to cross the boundary.

The routine works fine for moving within each section; it just doesn't handle the crossing.

The only other thing missing is a correctly visible COPY cursor blob when you are in the bottom half of the screen. This is because the CPC O/S programmers broke their own programming rules when they wrote the Basic rom.

It seems to make direct calls into the lower rom for the COPY cursor, because even if you remove every jumpblock entry (including the indirections) to place a cursor or invert a character position, it still manages to have the COPY cursor blob.

It calls the O/S properly to read characters off the screen, so you can actually COPY in the lower section if you keep count of your position.

Basic even handles characters typed in at the keyboard by itself, except that it does correctly call the indirections to print the characters and place the normal cursor blob. And since I made TXT DRAW/UNDRAW cursor perform scroll validation, the screen will scroll properly when typing in, although Basic will think that it hasn't. This means that COPY can miss a line if the screen scrolls while you are copying it.

I only performed three illegal system variable accesses (because I absolutely HAD to). One is the cursor position (which gets explicitly changed by the rom a lot), one is the screen base address store (to stop appalling flicker that would otherwise occur), and the final one is the cursor blob (which is also the VDU enablement flag in 1.1), because it gets directly altered by some rom routines.

Self modified

However, upon initialisation the program checks which version of the firmware it is running under, and it has a look-up table for 1.0 and 1.1/1.2 (which use the same addresses).

I don't have space to go into each of the entries that have been altered, but my versions work in exactly the same way as the originals and do not corrupt any more registers. The only difference is that the physical screen height used is larger.

The code itself does self modify, most of it being addresses and jumps performed during initialisation for the intercepted jumpblock entries. The only actual self-modifying codes are a couple of CPs which are altered for speed of return. For example calling TXT STR SELECT to select an already selected stream only executes three instructions.

Bombproof

Important note: While I have made the entire big screen package at least as bombproof as the original firmware, there are certain jumpblock entries which you must never call once the firmware patches have been installed. They are: TXT INITIALISE, TXT RESET, GRA INITIALISE, GRA RESET, SCR INITIALISE, SCR RESET, and JUMP RESTORE.

I have not de-activated these entries, as it would have been very short sighted of me to do so, but unless you alter them so that they do not restore jumpblock or indirection entries that I have altered – you must NOT use them.

I hope that you have found this article interesting, and that you find the big screen routine as useful as I have. The extra seven lines can make a significant difference to some programs.

It is a pity that the O/S isn't more flexible. If it had been, it would have been possible to widen the screen as well without too much extra code, but as it stands, the extra code required to give all the jumpblock calls would be substantial.

```
610 DATA 87,56,BC,8C,87,8F,87,D3,BD,1CA4
620 DATA E3,87,E6,87,D6,BD,E9,87,EC,2261
630 DATA 87,DC,BD,C1,89,C4,89,DF,BD,203F
640 DATA C7,89,CA,89,E2,BD,43,8A,8F,1A84
650 DATA 8A,C9,BB,3F,89,53,89,D2,BB,1AF0
660 DATA 56,89,9F,89,FC,BB,0F,8A,40,15D7
670 DATA 8A,DB,BB,AA,89,BE,89,EB,BD,201E
680 DATA 01,83,0A,83,14,BC,0D,83,16,0D5F
690 DATA 83,63,BB,83,83,54,BB,DE,88,1B0C
700 DATA 57,BB,F2,88,6F,BB,7F,84,72,1916
710 DATA BB,6D,84,78,BB,60,84,8A,BB,1993
720 DATA 09,89,8D,BB,09,89,CD,BD,03,14DC
730 DATA 89,D0,BD,03,89,6C,BB,A0,85,1899
740 DATA D9,BD,EF,87,87,BB,AA,88,D8,1EEE
750 DATA BB,A2,89,5D,BB,BC,87,60,BB,1A91
760 DATA C8,87,80,80,80,80,80,80,00,1287
770 DATA 80,80,80,80,80,80,80,80,80,16B2
780 DATA 80,80,80,80,80,80,80,80,80,16B3
790 DATA 80,80,00,80,80,80,80,00,00,0CB4
800 DATA 37,88,00,00,00,00,AB,82,0F,0AC0
810 DATA 8A,DE,88,00,00,20,84,2D,84,0E7C
820 DATA 36,84,3F,84,A0,85,7D,84,A1,17B4
```

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830 DATA 84,91,84,39,85,44,85,55,85,1377
840 DATA 68,85,85,85,F2,88,00,00,00,0D38
850 DATA 00,B2,84,00,00,CD,84,00,00,0B94
860 DATA 00,00,00,00,48,84,4D,84,CB,1219
870 DATA B1,85,B2,8D,B2,C6,B7,26,B7,1AFF
880 DATA 2E,B7,E6,03,FE,03,C8,F5,CD,1DF4
890 DATA FE,82,C1,04,3E,0A,87,10,FD,131B
900 DATA 3D,32,BD,8A,57,1E,1F,3E,07,0AAE
910 DATA D5,F5,CD,19,83,F1,F5,21,00,15BA
920 DATA 00,CD,D6,84,F1,D1,3D,F2,C4,2027
930 DATA 82,21,BE,8A,06,08,36,00,23,086B
940 DATA 10,FB,21,C6,8A,06,58,36,00,0CB2
950 DATA 23,10,FB,21,00,00,54,5D,E5,113D
960 DATA CD,3F,89,E1,11,FF,01,CD,56,1673
970 DATA 89,C3,A6,87,00,00,00,CD,AB,12CE
980 DATA 87,CD,0A,83,CD,A6,87,00,00,1028
990 DATA 00,CD,AB,87,CD,16,83,CD,A6,1A57
1000 DATA 87,00,00,00,FE,FF,C8,F5,CD,2015
1010 DATA 6E,83,F1,F5,32,1A,83,E6,07,14FF
1020 DATA 32,9C,8A,F5,21,BE,8A,CD,1B,1761
1030 DATA 84,22,90,83,F1,F5,21,5C,8B,17ED
1040 DATA CD,1B,84,22,5C,88,F1,F5,6F,1A86
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1050 DATA 87,87,85,87,85,21,C6,8A,CD,19DC
1060 DATA 1B,84,22,1E,8B,F1,87,F5,21,172F
1070 DATA 20,8B,CD,1B,84,22,44,8B,F1,1666
1080 DATA 21,9D,8A,87,CD,1B,84,22,46,112B
1090 DATA 8B,CD,95,83,F1,00,00,00,2A,0C71
1100 DATA 44,8B,D5,ED,5B,FF,FF,EB,CD,2527
1110 DATA C9,88,EB,73,23,72,EB,D1,00,170A
1120 DATA 00,00,E5,B7,28,02,3E,01,CD,0FA3
1130 DATA 8F,83,77,E1,C9,21,00,00,CB,12AA
1140 DATA 46,C9,F5,3A,9C,8A,87,21,48,137F
1150 DATA 8B,CD,1B,84,22,58,8B,7E,CD,168A
1160 DATA 2C,BC,32,5A,8B,23,7E,CD,2C,12EA
1170 DATA BC,32,5B,8B,F1,C9,CD,6E,83,1BC8
1180 DATA 78,E6,07,47,79,E6,07,4F,21,0F63
1190 DATA 9D,8A,3E,04,CD,F5,83,21,20,1253
1200 DATA 8B,3E,02,CD,F5,83,21,BE,8A,182A
1210 DATA 3E,01,CD,F5,83,21,C6,8A,3E,1616
1220 DATA 0B,CD,F5,83,21,5C,8B,3E,01,0F82
1230 DATA CD,F5,83,3E,02,21,48,8B,CD,13ED
1240 DATA F5,83,CD,95,83,00,00,A,3E,1616
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1250 DATA E5,F5,50,CD,13,84,F1,E3,F5,2118
1260 DATA 51,CD,13,84,F1,4F,06,00,D1,12A9
1270 DATA 1A,ED,A0,2B,77,23,EA,08,84,1353
1280 DATA C1,C9,5F,ED,44,14,83,15,20,0EB2
1290 DATA FC,85,6F,D0,24,C9,CD,D0,BD,1F23
1300 DATA 2A,FF,FF,25,CD,53,88,C3,CD,1D18
1310 DATA BD,CD,D0,BD,2A,FF,FF,24,18,17E0
1320 DATA F1,CD,D0,BD,2A,FF,FF,2C,18,1855
1330 DATA E8,CD,D0,BD,2A,FF,FF,2D,18,1855
1340 DATA DF,21,01,01,18,03,23,66,6F,0A29
1350 DATA CD,D0,BD,CD,B8,88,C5,D5,CD,224C
1360 DATA 53,88,D1,C1,C3,CD,BD,2A,FF,1F56
1370 DATA FF,CD,C9,88,E5,2A,5C,88,7E,1829
1380 DATA E1,C9,F5,CD,D0,BD,F1,2A,46,1BD0
1390 DATA 8B,86,3D,2A,FF,FF,6F,18,D9,19C5
1400 DATA 3E,01,F5,CD,D0,BD,F1,2A,46,199F
1410 DATA 8B,23,23,86,3D,2A,FF,FF,67,1881
1420 DATA 18,C5,2A,58,8B,E6,0F,77,CD,1764
1430 DATA 2C,BC,32,5A,8B,7E,00,00,00,09C1
1440 DATA 2A,58,8B,23,E6,0F,77,CD,2C,1389
1450 DATA BC,32,5B,8B,7E,00,00,00,2A,08C3
1460 DATA 58,8B,7E,F5,CD,2C,BC,32,5B,1623
1470 DATA 8B,23,7E,2B,77,CD,2C,BC,32,1366
1480 DATA 5A,8B,23,F1,77,00,00,00,23,09A4
1490 DATA 56,23,7E,23,5E,23,6E,67,D5,137B
1500 DATA E5,CD,D0,BD,CB,7C,28,02,26,11BB
1510 DATA 00,CB,7D,28,02,2E,00,CB,7A,0FE9
1520 DATA 28,02,16,00,CB,7B,28,02,1E,09FA
1530 DATA 00,7B,BD,30,01,EB,E5,7D,FE,1D0B
1540 DATA 20,38,02,3E,1F,2A,46,8B,77,0E15
1550 DATA 23,7B,FE,20,38,02,3E,1F,77,0D10
1560 DATA 23,E3,7A,BC,30,01,EB,3A,BD,16A0
1570 DATA 8A,BC,38,01,7C,E1,77,23,3A,1145
1580 DATA BD,8A,BA,38,01,7A,77,2A,44,0F38
1590 DATA 8B,36,01,23,36,01,CD,CD,BD,15C6
1600 DATA E1,D1,CD,10,87,00,00,00,CD,0F87
1610 DATA 4D,88,54,5D,CD,52,87,C3,CD,1B3E
1620 DATA BD,CD,4D,88,EB,2A,46,8B,23,12F5
1630 DATA 23,66,6B,CD,52,87,C3,CD,BD,1D12
1640 DATA CD,4D,88,EB,2A,46,8B,23,23,0FCA
1650 DATA 23,66,6B,EB,CD,52,87,C3,CD,1D51
1660 DATA BD,CD,4D,88,E5,2D,FA,82,85,1B03
1670 DATA 7D,2A,46,8B,5E,BB,38,0A,23,0DA6
1680 DATA 23,56,23,66,6F,EB,CD,52,87,17F4
1690 DATA E1,18,C2,CD,4D,88,E5,2C,7D,17D2
1700 DATA 2A,46,8B,23,5E,BB,30,0A,23,0C85
1710 DATA 56,23,66,EB,5D,6F,CD,52,87,175F
1720 DATA E1,18,B8,CD,D0,BD,CD,69,BB,1EF2
1730 DATA CD,52,87,21,01,01,CD,B8,88,144A
1740 DATA 22,FF,FF,C3,CD,BD,F5,7C,B7,222D
1750 DATA 20,12,7D,B7,20,0E,7B,FE,1F,1283
1760 DATA 20,09,3A,BD,8A,BA,20,03,F1,14E8
1770 DATA 18,4F,F1,32,92,8A,7B,FE,10,16DA
1780 DATA 38,1E,7D,FE,10,30,29,78,B7,1338
1790 DATA C4,5D,86,D5,1E,10,CD,F3,85,19D2
1800 DATA D1,2E,10,CD,03,86,78,B7,C0,181D
1810 DATA 18,6D,00,00,00,C5,D5,E5,CD,1A5A
1820 DATA A6,87,3A,92,8A,CD,F0,85,E1,1F66
1830 DATA D1,C1,C9,C5,D5,E5,CD,AB,87,2197
1840 DATA 7D,D6,10,6F,7B,D6,10,5F,3A,118F
1850 DATA 92,8A,CD,F0,85,E1,D1,C1,C9,231A
1860 DATA 32,92,8A,3A,BD,8A,57,1E,1F,0FD0
1870 DATA 21,00,00,CD,A6,87,78,B7,28,14C5
1880 DATA 1F,D5,CD,5D,86,11,50,00,21,0CA2
1890 DATA 1F,00,E5,CD,0B,BC,19,CD,19,133B
1900 DATA BD,CD,05,BC,E1,D1,5D,3A,92,18C1
1910 DATA 8A,CD,55,87,C9,D5,E5,3A,92,1C03
1920 DATA 8A,CD,5A,86,E1,D1,AF,18,03,14DE
1930 DATA 00,00,00,E5,D5,C5,F5,14,7A,189E
1940 DATA 94,32,93,8A,DD,E5,DD,21,94,1B76
1950 DATA 8A,E5,2E,00,CD,E5,86,DD,CB,1E9A
1960 DATA 01,BE,E1,2E,10,DD,21,98,8A,1580
1970 DATA CD,E5,86,DD,CB,01,FE,DD,E1,2207
1980 DATA F1,F5,2A,94,8A,ED,5B,98,8A,1AAB
1990 DATA 20,01,EB,3A,96,8A,4F,3A,9A,1404
2000 DATA 8A,B9,30,01,4F,D5,E5,CD,CE,1DAF
2010 DATA 86,E1,D1,09,EB,09,EB,CB,5C,1A5B
2020 DATA 28,04,7C,E6,C0,67,CB,5A,28,15DA
2030 DATA 04,7A,E6,C0,57,3A,97,8A,B7,1949
2040 DATA 20,06,3A,9B,8A,B7,28,04,4F,0EF2
2050 DATA CD,CE,86,F1,C1,D1,E1,C9,06,1DC1
2060 DATA 08,C5,D5,E5,06,00,ED,B0,E1,1C5A
2070 DATA 7C,C6,08,67,D1,7A,C6,08,57,141A
2080 DATA C1,10,EC,C9,CD,1C,87,DD,75,1ADD
2090 DATA 00,DD,74,01,EB,78,2A,93,8A,15CF
2100 DATA 26,00,CB,3F,28,05,29,CB,3F,0ECE
2110 DATA 20,FB,E5,19,CB,5C,28,01,7D,1185
2120 DATA E1,DD,77,03,ED,44,85,DD,77,19B8
2130 DATA 02,C9,CD,16,87,0E,1F,C9,00,0F25
2140 DATA 00,00,CD,A0,87,00,00,00,CD,0F7A
2150 DATA 92,87,00,00,00,CD,92,87,00,0F60
2160 DATA 00,00,F5,7D,A9,F5,CB,B9,3E,1C1E
2170 DATA 90,81,4F,F1,F2,4B,87,F1,F5,2153
2180 DATA C5,D5,E5,0E,C7,CD,92,87,CD,1E31
2190 DATA 4F,87,E1,D1,C1,2E,80,F1,CD,1F1A
2200 DATA 92,87,00,00,00,3A,5B,8B,E5,129F
2210 DATA D5,F5,7D,FE,10,30,0F,7B,FE,178F
2220 DATA 10,38,02,1E,0F,CD,A6,87,F1,1815
2230 DATA F5,CD,83,87,F1,D1,E1,F5,7B,22B5
2240 DATA D6,10,30,02,F1,C9,5F,7D,D6,19C5
2250 DATA 10,30,01,AF,6F,F1,CD,AB,87,1B78
2260 DATA 00,00,00,CD,A0,87,00,00,00,0A45
2270 DATA CD,A0,87,00,00,00,CB,7D,F5,167C
2280 DATA CB,BD,3E,90,85,6F,F1,28,0D,1387
2290 DATA 18,06,CB,65,CB,A5,20,05,F5,165D
2300 DATA 3E,C0,18,03,F5,3E,40,FE,00,12CA
2310 DATA 20,02,F1,C9,32,AF,87,32,00,113C
2320 DATA 00,F1,C9,47,CD,06,B9,F5,CD,1E37
2330 DATA 38,88,F1,C3,0C,B9,C5,D5,E5,209F
2340 DATA CD,4D,88,CD,06,B9,F5,CD,E9,20C2
2350 DATA 87,C1,F5,CD,CD,BD,78,CD,0C,1B77
2360 DATA B9,F1,E1,D1,C1,C9,CD,A0,87,2128
2370 DATA 00,00,00,CD,A0,87,00,00,00,0A50
2380 DATA 4F,CD,8F,83,C2,0F,8A,2A,1E,10BD
2390 DATA 8B,46,78,FE,0A,30,32,B7,20,10D3
2400 DATA 05,79,FE,20,30,30,04,70,58,0E0A
2410 DATA 16,00,19,71,2A,1E,8B,23,5E,0CB4
2420 DATA 21,00,00,19,19,19,7E,E6,0F,0D98
2430 DATA B8,D0,3A,C7,C7,A6,0770,58,0E0A
2440 DATA 23,5E,23,56,2A,1E,8B,23,79,0E25
2450 DATA CD,16,00,2A,1E,8B,36,00,C9,0EDE
2460 DATA 47,3A,C7,C7,07,D8,C5,CD,4D,1ABA
2470 DATA 88,24,22,FF,FF,25,F1,CD,D3,2051
2480 DATA BD,C3,CD,BD,CD,D0,BD,2A,FF,20CE
2490 DATA FF,CD,77,88,22,FF,FF,D8,E5,2366
2500 DATA 21,00,00,78,F6,01,86,77,2A,1090
2510 DATA 46,8B,4E,23,5E,23,7E,23,56,0DEA
2520 DATA 67,69,3A,5B,8B,CD,B5,85,E1,1CBD
2530 DATA C9,EB,2A,46,8B,23,23,23,7E,0F1B
2540 DATA 2B,BA,F2,86,88,56,1C,7E,3D,12F5
2550 DATA BA,FA,90,88,23,56,1D,2B,2B,0DBB
2560 DATA 2B,7E,3D,BB,F2,A3,88,23,7E,1779
2570 DATA EB,BD,37,F0,6F,06,FF,B7,C9,1DC1
2580 DATA 3C,EB,6F,06,00,B7,C9,CD,B8,1B07
2590 DATA 88,D5,CD,77,88,D1,F5,CD,C9,2317
2600 DATA 88,F1,C9,E5,2A,46,8B,7E,23,14B0
2610 DATA 23,66,E3,3D,85,6F,F1,3D,84,17CC
2620 DATA 67,C9,E5,2A,46,8B,7E,23,23,10A0
2630 DATA 66,E3,95,2F,C6,02,6F,F1,94,1942
2640 DATA 2F,C6,02,67,C9,3E,7E,F5,CD,1BFA
2650 DATA D0,BD,F1,E5,21,C7,C7,A6,77,1DBE
2660 DATA E1,CD,CD,BD,C3,31,88,3E,81,17EB
2670 DATA F5,CD,D0,BD,F1,E5,21,C7,C7,2114
2680 DATA B6,77,E1,C3,31,88,3A,C7,C7,1B36
2690 DATA E6,03,C0,C5,D5,E5,2A,FF,FF,22CE
2700 DATA CD,77,88,38,20,E5,7D,2A,FF,18D6
2710 DATA FF,CB,40,20,09,3D,BD,2C,38,0EE7
2720 DATA 0B,3C,6F,18,07,3C,BD,2D,30,0CF3
2730 DATA 02,3C,6F,22,FF,FF,E1,CD,5A,1DF3
2740 DATA 88,ED,4B,5A,8B,CD,86,87,E1,1CF2
2750 DATA D1,C1,C9,22,32,8B,E5,01,90,15C5
2760 DATA 00,09,22,34,8B,25,22,36,8B,0D57
2770 DATA E1,ED,53,30,8B,00,00,00,CB,0F48
2780 DATA 7C,28,03,21,00,00,CB,7A,28,0D19
2790 DATA 03,11,00,00,7C,FE,02,38,03,0B6A
2800 DATA 21,FF,01,7A,FE,02,38,03,11,0C42
2810 DATA FF,01,B7,ED,52,19,30,01,EB,13A3
2820 DATA CB,83,CB,C5,ED,53,40,8B,22,1622
2830 DATA 42,8B,E5,D5,01,90,00,09,22,0D3A
2840 DATA 3A,8B,EB,09,22,38,8B,25,22,0D57
2850 DATA 3C,8B,15,ED,53,3E,8B,E1,D1,1B88
2860 DATA 00,00,00,2A,40,8B,ED,5B,42,11D2
2870 DATA 8B,C9,3A,43,8B,B7,28,06,CD,1459
2880 DATA F8,89,CD,BE,89,3A,41,8B,B7,1905
2890 DATA C0,CD,E0,89,00,00,00,CD,CD,15C1
2900 DATA 89,00,00,00,CD,CD,89,00,00,0E1E
2910 DATA 00,D5,E5,ED,5B,32,8B,B7,ED,1DE2
2920 DATA 52,25,F4,F8,89,FC,E0,89,E1,2347
2930 DATA D1,C9,2A,34,8B,ED,5B,30,8B,15E0
2940 DATA CD,53,89,ED,5B,38,8B,2A,3A,120B
2950 DATA 8B,CD,9F,89,AF,C3,AB,87,2A,198E
2960 DATA 36,8B,ED,5B,30,8B,CD,53,89,17C2
2970 DATA ED,5B,3C,8B,2A,3E,8B,CD,9F,17A3
2980 DATA 89,C3,A6,87,F5,CD,C6,BB,CD,233A
2990 DATA CD,89,F1,F5,D5,E5,F5,CD,C0,26F8
3000 DATA BB,F1,CD,40,8A,E1,E5,ED,5B,1FEB
3010 DATA 32,8B,ED,52,7C,3D,20,05,7D,0FB0
3020 DATA FE,10,38,04,E1,D1,F1,C9,CD,2048
3030 DATA E0,89,E1,D1,CD,C0,BB,F1,00,1E13
3040 DATA 00,00,D5,E5,CD,C6,BB,CD,CD,2287
3050 DATA 89,D5,E5,CD,C0,BB,F1,C1,E1,25D6
3060 DATA D1,D5,E5,C5,F5,CD,8F,8A,E1,230E
3070 DATA D1,ED,4B,32,8B,B7,ED,42,25,1645
3080 DATA 7C,24,09,E3,B7,ED,42,25,AC,17A7
3090 DATA FA,74,8A,E1,D1,C9,24,09,E3,1A28
3100 DATA 42,4B,E5,F1,E1,D1,C5,F5,CD,25F1
3110 DATA CD,89,F1,C1,D5,E5,F5,E1,50,22E4
3120 DATA 59,CD,C0,BB,E1,D1,00,00,00,1187
```



CAGE PAGE

Amster's cage is an area of Prestel where Amstrad computer users congregate. It is a melting pot for ideas. Ask a question and someone is bound to know the answer. Ian Hoare acts as referee and has selected some highlights.

From MR P T BARRON
SUN 13 SEP 1987 19:24

I bought an Enterprise a while back but found it wouldn't work at 1200 baud. This was cured by replacing a resistor with a diode, but now I have another problem. I have an autodial program (from TUG II) but when I autodial, it makes my phones ring. Is this another fault with my modem or does this happen with all modems?

From MR J H RAWNSLEY
MON 14 SEP 1987 19:23

...both my Magic Modem and Dataphone Modem make the phone warble when pulse dialling.

● *The phenomenon of bell tinkle exists on all Voyager and Enterprise modems I have known and is common with autodial modems. Not a fault as such, but shouldn't really happen. To plagiarise myself, try dialling USA at 02.00 with more than one phone in the house!*

From DAVID FOSTER
TUE 15 SEP 1987 01:46

I wouldn't say that bell tinkle was only a speciality of the Voyager/Enterprise modems. Quite a lot of them also tinkle phone bells when dialling, even Hayes modems. I think it is more an incompatibility between modems and certain phones. I have three phones. One does the others don't.

From DIGITASK BUSINESS SYSTEMS
TUE 15 SEP 1987 21:03

Yes bell tinkle is a problem with auto dial modems (and two wire phones) but I hold the solution in my hand. It's a thysistor (and it may be spelt differently), Wired in series to one of the two wires on the tinkling phone (not necessarily the modem) it stays open circuit until a little bit of current "heats" it up.

It then...... closes the circuit and the bell rings. The result is that you lose about 1/2 second off the start of each "ring....ring" sequence, and now the good news...short tinkles are absorbed by the thysistor's "heat" period. So, no more tinkles...and it works.
PS. Actually, thinking about that, I think it should be "thyristor". It was some time ago since my friendly GPO engineer swapped me a few!

From MR J S MACRAE
WED 16 SEP 1987 20:44

Sorry to appear big-headed, but I think that Dave (D.B.S.)(not satellites) means THERMISTOR, not Thyristor!

● *From the description of what it does, I guess you are probably quite right. Now all we need is to find out the type and whether it is handed!*

From DIGITASK BUSINESS SYSTEMS
WED 16 SEP 1987 21:17

Yes, what type thyristor? Good question Well, the BT engineer didn't actually have a choice, just the ones he was issued with for the purpose. If it's any help this one has a label around the rubber sleeve cover saying : 1A-1 Nothing written on the glass underneath. Is that any use?

From THE MAD SYSOP
WED 16 SEP 1987 01:41

I use a Tandy/Racal modem, and a beast that I don't know the make of, but it's Hayes V22, and both of them have the same effect on my phones: One phone does nothing, the other tweets faintly for the first couple of digits, then shuts up.

From MR S J DIBBLE
WED 16 SEP 1987 19:18

Bell tinkle? Isn't there a wire in the normal telephone cable which is supposed to stop that. I have a WS4000 which does not cause tinkle, (I know it has the tinkle suppression device), but when this particular line was not connected, the other phone, (I have two) tinkled.

From MR P S CALLWAY
THU 17 SEP 1987 19:25

Re phone tinkle. I plug my modem in to the extension upstairs (2 wires only) & always had tinkle downstairs! Had a fault on the 'phone – BT engineer ran 3 wire cable to junction box outside house 3rd wire was earth) No more tinkle!

● *Thanks for the info, Peter. Odd, when I opened up my box to look, I found 4 wires, 3 connected (green blue and orange.) Brown wire wasn't.*

From MR M APPLEYARD
SAT 19 SEP 1987 00:58

The way in which telephones are wired depends upon the age of the installation. Until recently handsets were connected in parallel and bells in series, and you could have up to six telephones on one line.

The newer installations have both bells and handsets in parallel. You are restricted to fewer phones per line because of the paralleling of the

➤

bells. Also with parallel bells, more loss of transmission occurs because the impedence reduces for each extension connected.

On new type installations the wire connected to pin 3 of the boxes holds the clue to stopping tinkle. The wire should be coloured either green or white/orange, depending on the cable used. There really ought to be a connection in the modem to connect to this lead, but most don't seem to have thought it worth doing.

There isn't an easy answer to the problem. The use of a thermister is a good idea, but means delving into each phone. The best solution would be to modify the modem to supress the bells when it is in use.

Not many modems seem to be supplied with a circuit diagram, so I can't suggest a magic solution. (In my opinion all equipment sold should be accompanied by a circuit diagram)

● *Mind you, BABT approval might be invalidated if you carried out an internal modification to the modem.*

From MR P HACKWOOD
SAT 19 SEP 1987 21:23

Hello. We tinkle here and we tinkle there! Phone wiring is two wires to first jack and a minimum of three to the second jack or jacks etc. Two for the line and the magical third is the Bell wire (where did balance come from?) The third bell wire goes on term 3. An earth wire is not required but may be used by some private branch exchanges for recall.

My modem is only two wire (Voyager 7) and so it is designed to tinkle the bell,and it does. It has nothing to do with REN numbers or overloading. There is no legal way out of this, so can I remind everyone that it is is illegal to tamper with BTs wiring and jacks and adding to or modifying the modem would break the BABT approval conditions of the modem (It is legal?)
The third wire has two functions:
● It is the wire that rings all phones connected to slave/secondary jacks
● It suppresses the conditions that causes the bells on other phones to tinkle when you are dialling (does not happen when you are tone dialling) As to the thermistor that some have talked about, it used to stop the tinkling of bells before we had the modern PST jacks. I don't think it can work on the PST wiring (I have tried it to see) Thermistors are very rarely, if ever, used now.

There is no easy way to extend the third bell wire into a modem that isn't designed to have one. Hope that's of interest.

From MR C A BERRY
THU 17 SEP 1987 21:35

All this talk about tinkling phones, which is purely to do with the circuitry in multiple extension systems combined with tweeting tones and electronic dialling. But what I want is a device that tells me if, when Prestel answers, it will be actually available/working etc I waste a lot of calls to find out it is not going to work. Bad area?

CAGE PAGE

From MR P T BARRON
THU 17 SEP 1987 21:40

There IS a wire that is supposed to stop bell tinkle. It is called a balance and is connected to pin 3 in the phone socket. Unfortunately, if you trace the phone lead and cores back into the Enterprise modem this particular wire is not connected to anything and therefore the balance doesn't work.

● *Ahaaa. Now we're getting somewhere! Thanks very much. Does anyone know what you need to do with the balance wire?*

From MR M APPLEYARD
SUN 13 SEP 1987 23:37

A question regarding roms:- If address C000 is the ROM type, and 0=foreground 1=background, and 2=extension; then why does the Protext rom start with 04 at C000?

● *It doesn't! On my version (1.22) the first eight locations are as follows: 01 01 00 00 12 C0 C3 74 (hex). Remember, you have to switch the rom in before you can read it.*

From MR M APPLEYARD
MON 14 SEP 1987 23:45

Great success, I have managed to put my Prestel software on to eprom. Not only that but I got it right at the second attempt! Now I shall try with Tasword. Wish me luck, I'm sure I shall need it. Signed, Mike

● *Best of luck! Very well done! Tell us what your software was, by the way, as others might be interested to know. I have this fantasy about putting Masterfile III onto rom!*

From MR M APPLEYARD
TUE 15 SEP 1987 23:29

The comms software which I put onto eprom is that by Honeysoft, marketed by Cirkit. I'm not having much luck putting the Tasword on to rom, cos I can't work out how it knows if Tascode2 has been loaded or not.

● *Thanks. Honeyterm (Pace) of course is available on eprom, which might explain why it works OK. Perhaps Tasword checks to see if a memory slot contains a known value.*

From DAVID FOSTER
WED 16 SEP 1987 01:46

I wonder whether Mike Appleyard has got the Cirkit software actually working in rom, or whether it is copied down to ram to run? Chris Honey wrote both versions of Cirkit and also Commstar, and while they do have quite a bit of common code, there are many differences.

From DAVID FOSTER
TUE 15 SEP 1987 19:25

Fantasising about Masterfile3 in rom! Easy. As it uses the banked ram for all data storage, you won't benefit from extra memory, so the simple way is to just put the code in the rom and set up a rom command to copy it into the appropriate place in ram when called. At one time there was a company that offered to do it for you for about £15.

From TONY GOODMAN
MON 14 SEP 1987 23:52

Could some kind person tell me what the difference between the CF2DD discs and the CF2 disc other than about two quid. I think there was a chat on here a little while ago, Tar Signed, Tony

● *CF2 are the standard Amstrad CPC discs. CF2DD are the type originally sold for use in PCW 2nd drive. Thay are a higher performance disc, theoretically. They can be used in CPCs of course. Most have found CF2 fine in PCW 2nd Drive.*

From MR S J DIBBLE
TUE 15 SEP 1987 00:12

Can someone give me the answer to end a disagreement between myself and a work colleague. Wimp technology. Does the P stand for Pull down menus or Pointers, or does anyone have any other suggestions. I've seen the P referred to as both in the computer press so I'd like to know which is correct.

● *I have always seen Wimp as standing for Windows Icons Mouse Pulldown menus. No doubt I'll be corrected.*

From AMSTRAD PLC
TUE 15 SEP 1987 17:58

I've seen Wimp expanded to Windows, Icons and Mice Program – takes all sorts. If anyone has a Smalltalk manual or a document describing the original idea from Xerox I'd guess it probably has the "real" acronym – failing that, a Mac manual could probably be regarded as gospel.

From MR M APPLEYARD
THU 17 SEP 1987 23:04

Yes I made the rom download to ram. There didn't seem to be that much point in doing otherwise. Also I don't really know how to make it run in rom. I think I'm going to have to give up the idea of putting Tasword 6128 on to rom. I have achieved some interesting results, but no joy. Any suggestions chaps or chapesses.

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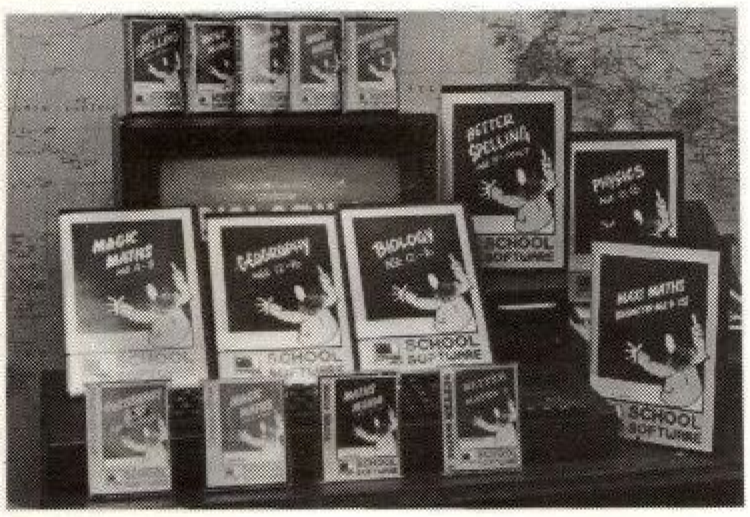
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TRANTOR

THE LAST STORM TROOPER

DAVID Perry has been responsible for some of the best programs the Amstrad has ever seen. His credits include Great Gurianos, Ikari Warriors and miscellaneous Mikro Gen titles. He is a programming giant in a physical as well as metaphorical sense, a good six foot six, the jolly programming giant knows a good game when he sees one.

Trantor is David Perry's tour de force. He boasts that blood, sweat and tears went into the programming. And it shows. The game opens with a Mode 0 representation of the inlay card, much like any other game. Then the digitised speech growls "Trantor, The Last Stormtrooper" and you know that this game is summat special.

The plot has you crash-landing a spaceship on a planet. The name Trantor comes from the roofed-in world detailed within a science fiction tale. A huge spaceship, almost the full height and width of the screen, appears to descend. This is a clever psychological trick. The spaceship actually stays still with the sides moving up, but the effect is convincing – even when you have worked out what is going on.

Trantor then loads the credit screen. David wrote the game for Probe, without knowing who was going to sell the finished program. The Probe name appears a letter at a time each tumbling on to the screen like a cherry which has lost its fruit machine reel. By the time you have been through that lot you expect to be disappointed by the actual game. Oh ye of little faith.

One final title screen asks you to select keyboard, joystick or key definitions. There are four principal directions for run left, run right, duck



A burger a day helps you run, shoot and slay

(quack) or jump, plus fire. I was delighted to see a pause option. It's only really possible to take decent screen shots if the game can be properly paused. Hit the two, pick up the Cheetah 125 special, a joystick with more buttons than your average Otis and prepare to blast.

With only the four principal directions the extra buttons are not called into play, but it's nice to have them there just in case. The sprite materialises. If you are still holding down the two a tongue of flame bursts out of your gun with a spectacular streak of red, orange and yellow.

The stormtrooper is huge, a good 50 pixels high, his shoulders 16 pixels wide. You can turn either way, so you hazard a few steps to the left. With a smooth, loping gait the man runs into peril. Smaller, equally colourful sprites swarm in. Contact with them depletes your energy, OK so it kills them, but you don't get any points for alien annihilation.

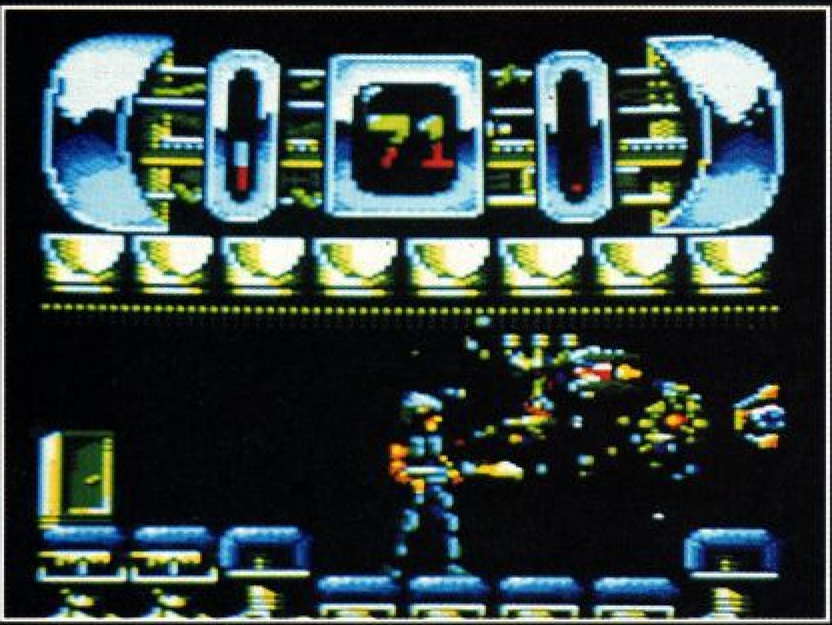
The big blue alien on level five kills you instantly – so keep firing. It is worth learning the alien movement patterns, such knowledge allows you to duck rather than blast. Your flamethrower is limited and needs refueling at tanks which look like barbers poles.

Each of the eight levels contains one pair of tanks, a locker and a terminal. The locker contains goodies of uncertain merit – a hamburger which replenishes your energy, a pass disc to get you out at the end of the game. A clock which resets the constantly decrementing counter and a shield which protects you from the aliens are all useful, but a bomb gives you mere seconds in which to find a screwdriver and defuse yourself. Fortunately if you pick up the tool before the bomb the device is rendered harmless.

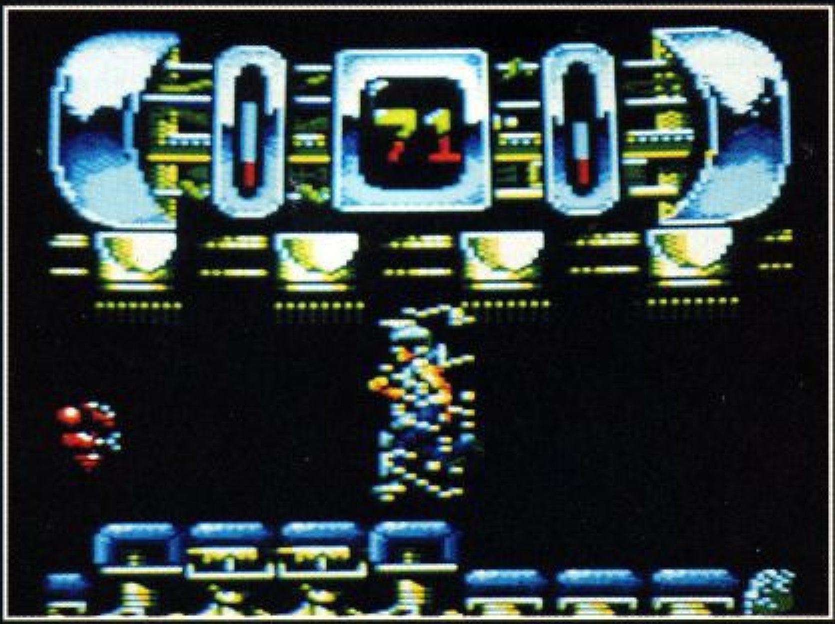
Movement from level to level is by a series of lifts. By standing on the lift and either jumping or ducking you move up or down. When you do this the aliens disappear from the screen, so it is a useful trick to jump on a lift and go both ways, particularly if you want to get to some fuel tanks near the lift.

The crux of the game is a password. This is obtained from an anagram picked up letter by letter from the terminals on each level. A console will ask for the password and give you a teleporter code in exchange. Even if you guess the password from some of the letters you must visit every terminal for the teleporter to work. There are 12 passwords, detailed in Table I.

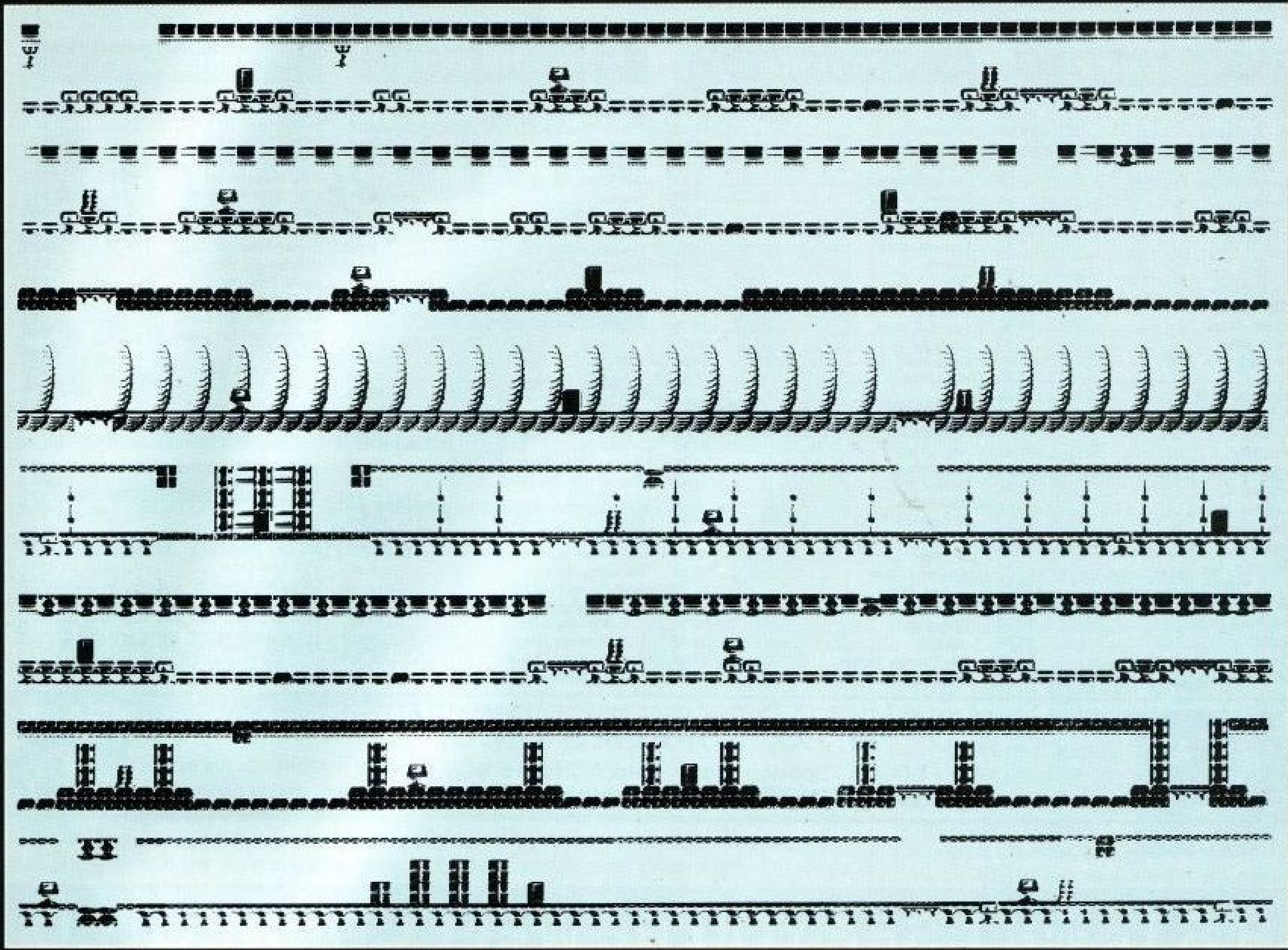
You must get from terminal to terminal in 90 seconds; failure to do this results in spontaneous combustion – you shatter into 1000 pixels,



Aliens bite dust with a stunning explosion



The shield protects you



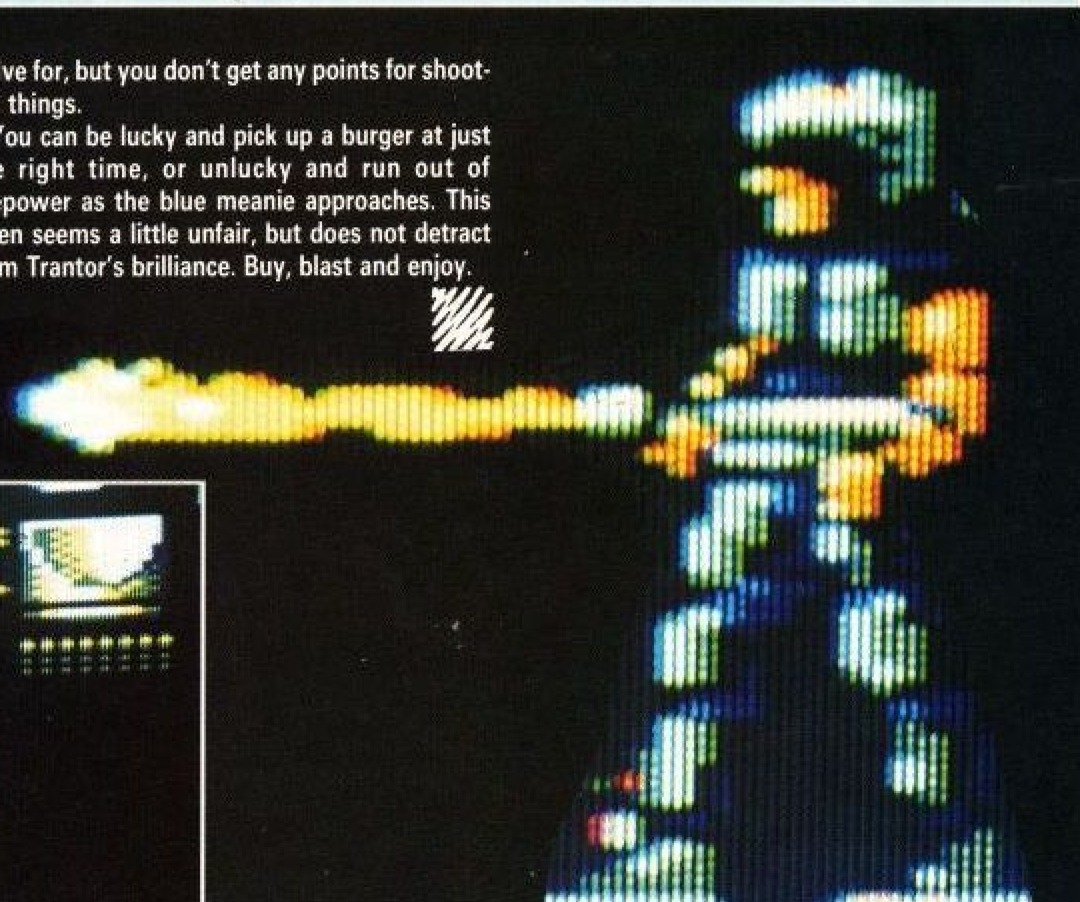
an effect which is worth dying for. The time limit is fairly generous, if you really find it causes you problems then you are being a real slouch. Once you have inserted the pass disc into the computer, legged it to the transporter and typed in the password, you can teleport out.

Trantor is an incredible game, the first program in a long time which has left me bleary-eyed from all-night zapping stints. If I have a criticism it is in the scoring system. Progress is rated on a percentage basis, the witty comments for different scores give you something to strive for, but you don't get any points for shooting things.

You can be lucky and pick up a burger at just the right time, or unlucky and run out of firepower as the blue meanie approaches. This often seems a little unfair, but does not detract from Trantor's brilliance. Buy, blast and enjoy.



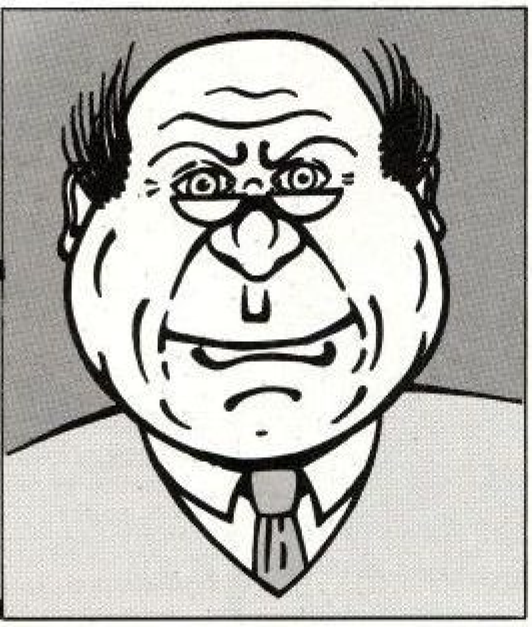
Running to a locker



Trantor Password Codes: Cassette, Computer, Graphics, Hardware, Joystick, Kempston, Keyboard, Password, Sinclair, Software, Spectrum, Terminal

Table I

Applications advice



David Foster, ACU agony uncle and master of the files, sorts through a hotch potch of questions.

WHAT started out as a trickle of applications queries has now started to develop into a steady stream, and so far it appears that printers cause more problems than just about any other piece of equipment or software.

This month I shall try to answer as many questions as possible, but if your question isn't answered, then I am afraid it will have been held over for next month. Keep the questions coming.

Old chestnut

S Hayes has a CPC464 and is interested in learning how to program in C language and wants to know whether he can obtain a legitimate copy of CP/M Plus, as Arnor C runs under CP/M Plus and cannot therefore be used with the CPC464 (which is only supplied with CP/M2.2), even if he bought an add-on memory pack to increase the available memory.

It is possible to obtain CP/M Plus from Digital Research, but this is an un-installed copy and will not work on the CPC. It takes many, skilled, man-months to install CP/M on a Z80 system. There is no legitimate way to buy CP/M plus on its own. I'd go for Hi- Soft C which runs under AmsDos.

Virtue is bold, and goodness never fearful.

Gwen Kitchener has a Silver Reed EXP500 printer and is having problems reproducing bold (emphasised) printing when using Protext. The reason for this is that the EXP500 doesn't support emphasised printing.

An example is given in the printer manual of how you can reproduce the effect by following each character with a backspace and then printing the same character a second time. This can be done from Basic without too much difficulty, but it is not really a practical proposition with a word processor.

The simplest way to reproduce bold (actually it is really double strike, not bold) with Protext is to set line spacing to zero before the line to be printed in bold, printing it, then resetting the spacing back to one before printing the line a second time.

Unfortunately this will only work where a single line, or part of it, is to be bold, but it is better than nothing. Figure 1 gives an example where only a part of the line will be printed in bold.

Printer problem

E.C. Odell and H.J. Sedgwick have the same problem. Both of them have bought copies of early Amsoft titles and have now discovered that they were written to work with the original DMP1 printer, whereas they have DMP2000 printers.

The "old" DMP1 printer used a different set of printer control codes from the current DMP2000, which has Epson-compatible codes and unfortunately these programs have no facility to customise the program to work with other printers. The programs concerned were written by Triptych (SOFT 1915-1918) and I understand that they no longer provide any support for them.

Unfortunately there isn't a simple answer to the problem. I don't know any of the programs concerned, but with some programs there is a way round the problem if they have an Ascii print to file option, in which case you can print the output to a file from the program and then subsequently load it into a word processor and print it from there.

I am afraid that it all goes to highlight the fact that when you buy a program you should first ascertain from the supplier whether it is compatible with your equipment, before parting with your money.

If anyone has managed to sort out fixes for the printer problems with Starwatcher, Project Planner, Entrepreneur or Decision Maker, I am sure that a number of readers would be pleased to hear of them.

Programming with style

I have also received a letter from Mrs A Butler, which is not strictly speaking an Applications problem, but is worth a brief discussion. Her query is why Basic contains the GOTO command when it is frowned upon by the computing academics.

Early versions of Basic had little more than the GOTO command to enable you to go to other parts of the program, but nearly all modern versions have a number of alternatives, such as GOSUB, ON var GOSUB, WHILE-WEND, and so on which provide much more elegant solutions.

The main problem with using GOTO is that in a large program the flow of the program hops around all over the place and it can be all but impossible to trace what is actually happening, whereas the alternative commands are usually much more obvious.

I wouldn't go so far as to ban the use of GOTO, though I do try to avoid its use as much as possible. One occasion when GOTO should never be used is to jump out of a FOR ... NEXT loop.

The reason is not only because it is messy, but because every time you leave a loop by this method you actually leave a value on the stack, which has the effect of reducing the memory available to the program. If done enough times, it will actually cause the program to grind to a halt with an Out of memory message when the stack fills up.

If you want to leave a FOR ... NEXT loop prematurely, the correct way is to increase the value of the counter variable to its maximum

Figure I: Example of simulating double strike/bold printing with Protext on a printer that does not support it.

```
>LS 0
This is the normal, but this is bold and this is normal
>LS 1
                        but this is bold
This is the remainder of the text and will be normal unless
the above sequence is repeated for further bold sections.
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value, at which point the program will leave the loop correctly. Figure 2 gives a short example.

Having said that, FOR-NEXT loops are intended for carrying out a task a set number of times, so really a WHILE ... WEND loop should be used where the number of loops might be variable.

```
10 FOR n = 1 TO 10
20 sq = n*n
30 IF n = 5 THEN n = 10
40 NEXT
50 PRINT sq
```

Figure II: Example of how to terminate a FOR ... NEXT loop prematurely (if you really feel you have to), without using GOTO to jump out of it.

Close encounters



Stephen Raftery has encountered a problem with his CPC 464 when he connects his Rombo rom board, DkTronics 64K ram expansion and his disc drive. Everything works well until he tries to use the disc drive, at which point the computer either performs a reset, or dumps a load of garbage to the screen.

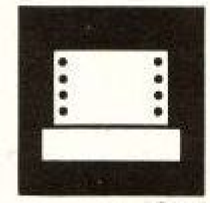
This is a well documented phenomenon and is largely connected with the DDI interface for the disc drive. For some obscure reason the disc drive interface is very sensitive to where it is positioned, and really needs to be located as close to the computer as possible.

Before anyone writes in to say that they don't have any problems, I should say that there appears to be a wide difference in the degree of tolerance that different interfaces exhibit, and some cause no problems at all.

The problem can usually be eliminated by doing two things. First of all, make sure that the connectors are all clean and shiny. A favourite trick amongst Spectrum owners is to periodically wipe the connector with a pen eraser to remove oxidation, and this seems to work well.

Secondly you must make sure that the disc interface is positioned as close to the computer as possible and mounted securely. As the DDI does not have a through connector this can be a bit of a problem, but the Rombo ROM board has a second connector positioned immediately above the one that connects it to the computer, so that should be used for the disc interface and the DkTronics ram pack can be plugged on to the second connector which is a part of the rom box itself.

Protext printer problems

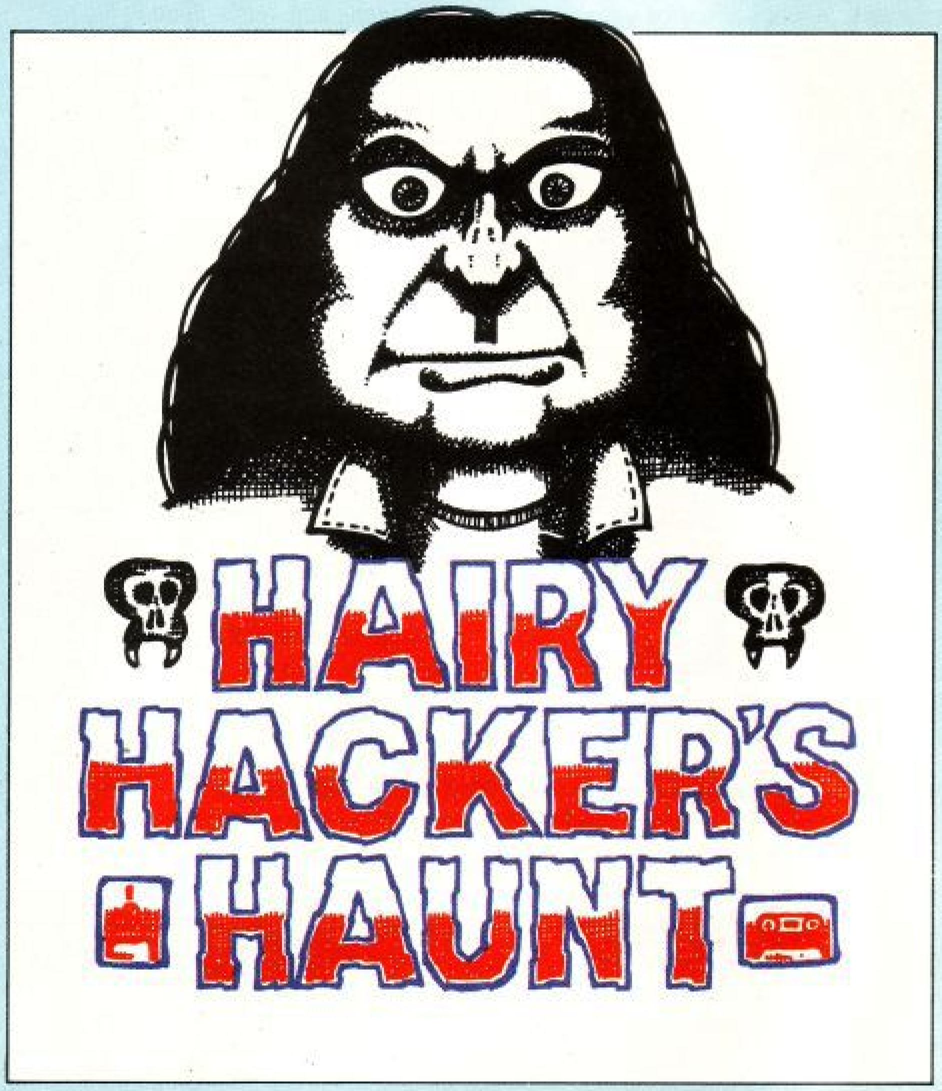


A.G. Hutton is having problems with a couple of the programs in Print Master by Siren software. The programs are Ascprint and Poster and it appears that the instructions with the programs state that the files to be used must be pure Ascii.

Mr Hutton is using the PRINTF command in Protext to save the file as an Ascii file. In fact, Protext when used with Promerge does produce a pure Ascii file, but when used on its own it precedes the text with a 'printer reset' code and this is what is causing the problems.

The solution is to redefine the printer control code @, which by default contains the reset codes, using the SETPRINT command. Select the Redefine printer control code option, then press the @ key, followed by RETURN twice to give it a null value. Using PRINTF will then produce a pure Ascii file which should work with the above programs. If pure Ascii files are frequently required, it is worthwhile using the Save printer driver option in SETPRINT to save the new version, calling it say ASCII.PTR. Whenever an Ascii file is required, typing PR ASCII, to load the driver will set things up correctly.

Merry Pagan Festival, all you scotch drinkers and mince pie guzzlers! Knock me out if this isn't the Christmas issue



WELCOME to another wonderful hash-up, hackfans, another mammoth masterpiece of misspronts and speling mistakes. Mind you, the odd misunderstanding comes into it now and again, like when this bloke approached me (not that sort of misunderstanding!) who wanted to use his 464 for a rowing-boat simulator.

He said "Well, we just hook the joystick port up to sensors on the things that the oars rest in." "Rollocks", says I. "No, I'm serious !" He replied.

Well, count yourselves lucky. There's going to be a short Hairy Hacking column this month due to my roof falling in. If I don't do something about it soon, I'm going to have an impromptu water bed for Christmas.

Anyway, just in case you missed it last time, we'll start off with the reprint of the oh-so-vital SLIP (Speed Lock Infiltrator Poke), Justin's brilliant lockpicker, which we use from time to time.

Remember, you tack SLIP pokes on to the end of this one, and a PASTE [R] (Rewind tape to start and press any key. Reasoning behind this minimal and archaic) to run it. Though we haven't got any SLIP pokes this month, there were rather a lot of them last month, so this might be useful if you haven't shredded the magazines for gerbil nesting material or whatever you do with them:

The UT in line 90 may be replaced with other Brontisvogan swearwords, especially from Charles and Dave from Merseyside. They've had a wee problemette in that they get "Syntax error". Now then, the syntax error isn't really in the line that it says it's in ('cos you've checked it 50 times), it's just fooling you. OK then, it's liin-...liyei..lyiein...telling fibs.

The error is really in one of your lines of data (probably using ohs for zeros or summat). This causes the bit of data read in the line to look rather nonsensical, and the machine pipes up with "Syntax error". Confused ? Just check the data, OK ?

Anyhow, the two terrors of Merseyside also sent in all the passwords for Amsgolf. It may sound old hat, but I know of at least three people who want to know them:

Handicap	Password
16	S9V73
15	A6P12
14	Z3F0A
13	B0X24
12	FAB11
11	JIT93
10	H7Y48
9	E2G86
8	M7H21
7	P9V60
6	D1C58
5	S6I52
4	N6L37
3	W8M10
2	N9U99
1	E3R74
0	K3R56

```
10 ' Lock Picker Ver. 1.1 (c) Justin
20 MODE 1:MEMORY 12345
30 tot=0:ad=&7FF0
40 READ a$:IF a$="end" THEN GOTO 80
50 a=VAL("&"+a$)
60 POKE ad,a:tot=tot+a
70 ad=ad+1:GOTO 40
80 READ sum
90 IF tot<>sum THEN PRINT"UT! You'd
better check all the data.":END
100 LOAD "!"
110 CALL &7FF0
120 DATA f3,21,00,80,11,00,be,01
130 DATA ff,00,ed,b0,c3,35,be,4a
140 DATA 21,0b,b9,36,b9,23,23,23
150 DATA 36,2e,ed,4b,02,bc,06,8a
160 DATA 11,00,b9,c5,1a,d5,11,79
170 DATA 03,91,21,8a,b9,ae,77,23
180 DATA 1d,20,fa,15,20,f7,d1,13
190 DATA c1,4f,05,20,e6,3e,c9,32
200 DATA 82,b9,c3,56,be,21,49,be
210 DATA 3e,c3,32,f4,37,22,f5,37
220 DATA 21,ff,ab,11,40,00,c3,c1
230 DATA 37,21,4b,00,36,45,23,23
240 DATA 23,36,99,f3,f1,c9,dd,21
250 DATA d9,bb,ed,5b,74,be,cd,67
260 DATA bb,dd,21,76,be,dd,6e,00
270 DATA dd,66,01,11,78,be,73,23
280 DATA 72,c3,03,bc
290 '
```

The SLIP listing should have appeared last month, but I don't get to see these things until they come off the press, so I haven't read last months yet. Meanwhiles, there's you reading this months. Still confused?

Speaking of confused people, a letter from Australia. Actually, this guy isn't at all confused. In fact he's got a bit of help for anyone who accidentally bought an Amstrad LP-1 for his monochrome monitor. Toby Blackman wrote in a little while ago on this point, having just read the words "Colour monitor only" on the box.

Well, Leigh Clifford of Geraldton in West Oz has found a fix that works on his lightpen. He says: If you tug the thing apart, you will find that there are two areas covered in insulating tape. If you remove the tape closest to the tip of the pen, the LRD (clear plastic bit) can move closer to the screen, and this does it some good.

Ward 10 stuff

Having had a bit of truck with these lightpens, I wouldn't recommend you go out and buy one just for this. Emergency surgery only, and I don't see that there is a lot one can seriously use them for anyway.

The best thing we ever did with one was when Dave attached one to the printhead of a DMP2000 and converted it into a prototype scanner. It worked fine if you tilted your head through 35 degrees.

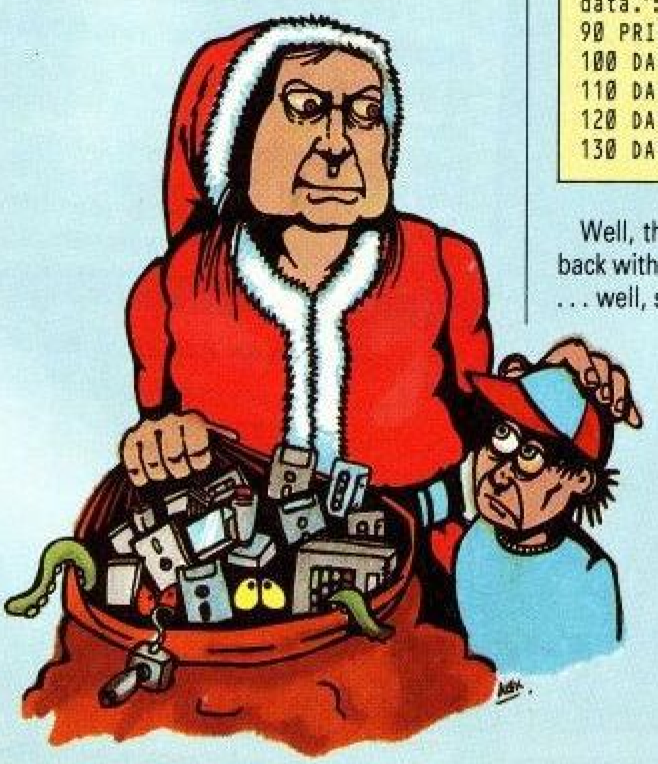
Whatinthebleedinghellis Bosconian 87 ? Well, whatever it is, there are infinite lives and bombs for it in here somewhere. Oh yes, its that scrolly shoot 'em up arcade jobby isn't it ? PASTE [R]:

```
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&110 TO &132
40 READ a$:a=VAL("&"+a$)
50 tot=tot+a:POKE n,a
60 NEXT n
70 IF tot<>2751 THEN PRINT"UT! Theres
a problem with the
data.":END
80 LOAD "",&4000
90 PRINT"Loading:":CALL &110
100 DATA 21,00,04,e5,11,7f,26,3e
110 DATA 16,cd,a1,bc,21,23,01,22
120 DATA 32,04,c9,af,32,40,28,32
130 DATA 49,28,32,9c,23,32,d7,37
140 DATA c3,37,04,4a
```

One from the mailbag now, from Joseph ("Mighty Joe") Garner of Cheshire. Actually, he sent in pokes for Cauldron, Commando, Bombjack and Sigma 7, as well as this one which is for Arkanoid.

Unfortunately, I've published pokettes for all the others (sometimes twice) already, and I'm not too sure about Arkanoid. Still, it's a good poke (as long as you don't start it off with too many lives), so rewind the tape fully (it's a loader for a loader, you see) and run this little lot:

```
1 REM 'arkanoid poke: infinite lives
2 REM 'copyright J.P.Garner (Mighty Joe)
1987
3 REM 'biggie this. as always lines
100-999 inclusive need not be
included but 1000 must be
10 FOR a=&45 TO &45+37:READ b$:POKE
a,VAL("&"+b$):NEXT a
11 DATA 06,flc,21,flfl,1,11,flfl,c-
fl,cd,77,bc,21,flfl-
,fl8,cd,83,bc,cd,7a,bc
12 DATA 21,ac,fl9,3e,cd,77,23,3e,7-
fl,77,23,3e,flfl,77,23,c3,flfl,fl8
13 FOR a=&100 TO &10B:READ b$:POKE
a,VAL("&"+b$):NEXT
14 DATA
41,52,4B,41,4E,4F,49,44,2E,42,49,4E
20 FOR a=&70 TO &70+9:READ b$:POKE
a,VAL("&"+b$):NEXT
21 DATA 21,f3,c2,3e,64,77,21,00,c0,c9
100 FOR a=&80 TO &80+19:READ b$:POKE
a,VAL("&"+b$):NEXT
101 DATA
cd,83,bc,21,1fl,1,11,46,41,7e,a7-
,fe,ff,c8,12,13,23,c3,89,flfl 110
POKE &45+36,&A0:POKE &45+37,0
120 FOR a=&A0 TO &A0+17:READ b$:POKE
a,VAL("&"+b$):NEXT    121
DATA 21,e4,fl9,3e,cd,77,23,3e,8-
fl,77,23,3e,flfl,77,23,c3,flfl,fl8   130
FOR a=&110 TO &110+46:READ b$:POKE
a,VAL("&"+b$):NEXT  131 DATA
48,41,43,4b,45,44,2fl,42,59,2-
fl,54,48,45,2fl,4d,49,47,48,54,59,2fl,4-
a,4f,45 132 DATA
2e,20,54,48,45,2-
fl,53,43,45,4e,41,52,49,4f,2fl,49,53,2-
fl,5fl,4f,4f,4-
f,ff 1000 CALL &45
```



Don't worry about the tape, Joe. It'll be winging it's way back to you via Royal Mail, with all the speed of a pregnant hippo.

As I have been accused by several people of having one loose in my belfry (some of whom can now walk again), I think we'll have infinite lives for Elite Hitpak's Batty. PASTE[R] or zip forward past first file, the choice is yours if the price is right. Aaaargh ! Too much television:

```
10 MODE 0:BORDER 0:OPENOUT "d":
MEMORY 2991
20 FOR i=0 TO 15:READ c:INK i,c:NEXT
30 LOAD "!pic",49152
40 LOAD "!a",17000
50 LOAD "!b",2992
60 POKE 17002,176:POKE 17003,11
70 POKE 17688,0
80 POKE 17702,0
90 CALL 17000
100 DATA 00,26,13,10,11,02,03,06
110 DATA 15,09,18,17,24,20,08,01
```

Well, Sol likes chasing flying things, but is having an easy time of it over the Christmas season. She just sits there eating canary pudding (with no added tweetener).

As the final offering this month, let's have Justin's infinite lives pokeykins for Mastertronic's other arcade conversion that's kicking around at the moment; Motos. PASTE[R]:

```
10 MODE 1:MEMORY 12345
20 tot=0
30 FOR n=&150 TO &16F
40 READ a$:a=VAL("&"+a$)
50 tot=tot+a:POKE n,a
60 NEXT n
70 IF tot<>2836 THEN PRINT"UT! Theres
a problem with the
data.":END 80 LOAD "",&4000
90 PRINT"Loading:":CALL &150
100 DATA 21,00,40,e5,11,b6,37,3e
110 DATA 16,cd,a1,bc,21,63,01,22
120 DATA 24,40,c9,af,32,fb,05,3e
130 DATA 18,32,ff,05,c3,00,04,4a
```

Well, that's it for this year. Next year we'll be back with some exciting things like, er . . . and, er . . . well, something pretty exciting anyway.

TTFN Vax & Suz.

Dip into the black

Jill Lawson, Mode 1's Monet, experiments with the single colour limitations of Mode 2 by using Cherry Paint

AT the recent Amstrad Show I persuaded those nice people on the Siren software stand to let me try out their Cherry Paint drawing package. This is a low cost utility which is designed to work on any of the CPC computers, using only the hi-res, black and white mode. CPC 464 owners will however, need to have a disc drive, since the program is not available on tape.

Included with the disc is a screen plan with pointers to the pull-down menus which occupy the top line, function and size icons and line widths which form a panel to the left of the drawing area; and a selection of 40 pattern icons at the foot of the screen.

A flimsy single 3in x 7in sheet bears concise instructions for loading, operation, and configuration of the program for use with keyboard, joystick or AMX mouse, and for dumping files to a DMP 2000 or Epson-compatible printer. There are three demonstration pictures on the disc.

On loading up the background is white, the cursor assumes the shape of a pencil, and the appropriate icon is inverted to indicate that you are in draw mode. You may sketch freehand points and lines in black. Lines can be drawn in a choice of four widths. There is a one-size spraycan and six brushes large and small squares and spots, and oddly, a short horizontal line and one diagonal line.

Colour of sorts

By selecting the spraycan, brush or line-drawing icon along with one of the available patterns, texture can be applied in spray, brush-stroke or single line form.

Here the apparent anomaly of applying a paint label to a program which operates only in black and white is to some extent explained, since other programs tend to work on the principle of outlining a shape, then filling it, while Cherry Paint has no fill command, but encourages you to apply the pattern directly to the drawing. Happily an undo function allows you to correct errors easily.

I missed having a fill for large areas, and for the little twiddly bits where the available brush shapes didn't quite fit, but this was not too great a problem as there is a very nice zoom facility which enables single pixel plot/unplot on a toggle principle within a moveable magnify window, allowing you to see the effect, simultaneously, on the main drawing.

There is also an erase option, but this is largely superfluous, since you can choose to paint with a white brush.

Restricted view only

Because a considerable area of the screen is utilised for icons, the whole drawing area is not available at any given time, but, with the hand icon it can be "pushed around" at will, and View Page permits a reduced view of the complete picture.

This is adequate for most purposes to gauge the general layout. It falls down on definition where there are several different dark stipples used, as these all come up black, and there is no alternative way to view the whole area apart from printing it out, or loading it into an art utility which does permit a view of the whole screen.

It was disappointing too, that there is no way to define your own patterns. In the house picture, I was not satisfied with the roof tile pattern, feeling that the roof should be darker, and found that adding alternate vertical lines in black and white to achieve the desired effect was slow and tedious.

Boxes may be drawn either in outline only, with a varied thickness of line; outlined, and filled with a pattern; or in a pattern only, with no outline. Rather surprisingly there is no circle command.

The dotted box enables you to select an area of the drawing which may subsequently be cut/pasted, copied/pasted, deleted, inverted or mirrored horizontally and vertically. This was the only section where I thought the instructions were not completely clear, and it might be wise to save your drawing before experimenting.

Text may be added, and although the font menu has only one option, four choices each of size and style give some variation.

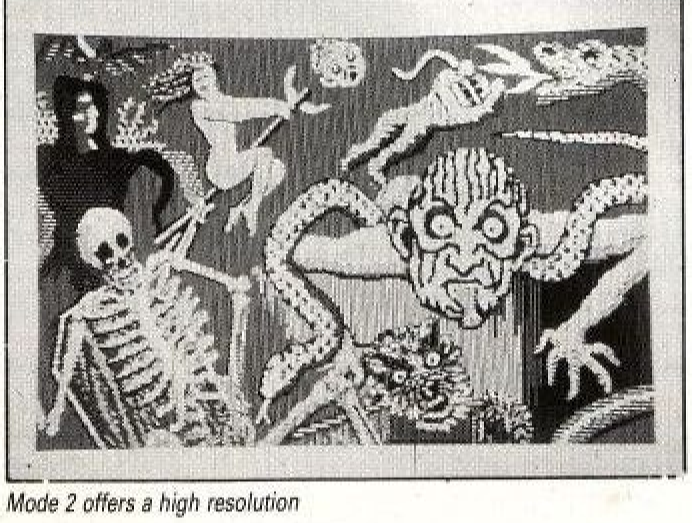
Disc management

The file menu is straightforward, with the ability to save, load, delete or catalogue files. It supports the use of a second disc drive and includes formatting a new disc. This menu also allows the screen to be cleared to the current pattern. Format does require confirmation (Oui or Non – this is a French program) but New page should be used with care, as it acts instantly on selection, and cannot be undone.

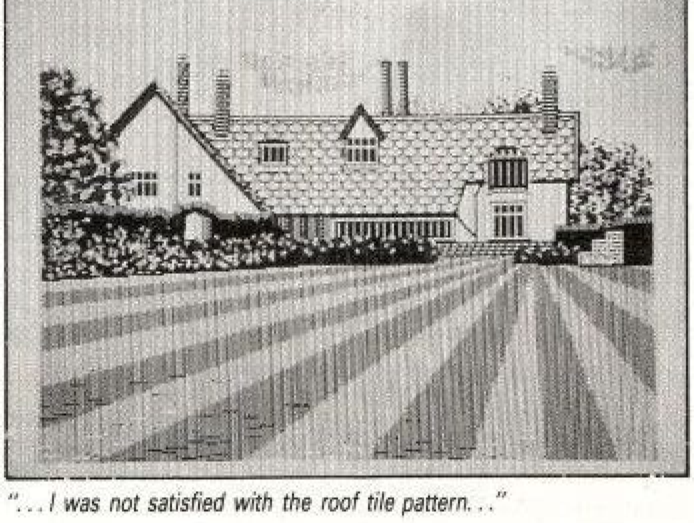
All in all, despite a slightly unfinished feel, this utility incorporates many of the sophisticated facilities associated with much more expensive art packages.

Within the limitations of disc-only, single mode, black and white operation, you get a lot of very useful features for producing good quality hi-res monochrome illustrations, and this program must have particular appeal to owners of the earlier cpcs without a memory expansion. At such a low price it has to be fair value for money.

Supplier: Siren Software
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". . . I was not satisfied with the roof tile pattern. . ."

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Q: OH, DO I NEED TO UNDERSTAND THE PROGRAMS OR EVEN ALTER THEM TO MAKE BACK-UPS?

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Q: HOW DOES IT WORK THEN? IS IT EASY? USER-FRIENDLY? ERROR-TRAPPED? IDIOT PROOF? GUARANTEED?

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Q: DON'T YOU CORRUPT THE SCREEN WITH YOUR MENU, INSTRUCTIONS, PULL DOWN WINDOWS, ETC.?

A: NO. MULTIFACE TWO has its own memory (8K ROM & 8K RAM) and a lot more hardware – thus when it finishes its job or when you re-load your back-ups, everything is **FULLY** and **AUTOMATICALLY** restored. NOTHING else can do this and on all other devices you will need to try to restore the screen: its modes, colours, windows, etc. – this takes quite some time and effort and the failure rate is high...

Q: OK, SO MULTIFACE CAN COPY FROM TAPE TO DISC, BUT CAN IT ALSO COPY FROM TAPE TO TAPE OR DISC TO DISC OR DISC TO TAPE?

A: Of course it can. MULTIFACE saves either to tape or disc and it saves whatever happens to be in the computer at that time: it does not matter whether it was originally loaded from tape or disc or even typed in, so all combinations are possible.

Q: SO FAR SO GOOD. BUT CAN'T I DO ALL THIS WITHOUT THE MULTIFACE?

A: ABSOLUTELY NOT! First, you need a hardware device, a "magic box", to be able to stop and copy any program at any stage – no software-based copier can in principle ever do that. Any tape/disc copier will just try to copy a tape as it is – if there are unorthodox leaders, speedlocks, protections against copying, etc., you'll end up with a problem – but not with a back-up. If you wish to back-up any game at any point, be it upon loading or after going through the lenslock or half-way through, if you wish to poke infinite lives and then save, etc. – you just can't do anything like it with tape/disc copiers – you need the MULTIFACE!

Q: MULTIFACE IS NOT THE ONLY 'MAGIC BOX' ON THE MARKET – WHY SHOULD I BUT IT MORE THAN ANYTHING ELSE?

A: There are four devices on the market: Action Replay by Datel Electronics, Disc Wizard by Evesham Micros, Mirage Imager and MULTIFACE TWO. Each manufacturer would naturally argue his product is the best buy – fortunately (for you and us), MICRONET recently compared all four units and MULTIFACE TWO came out the best in literally all respects: the most successful one – 100%!, the ONLY AUTOMATIC ONE, the FASTEST ONE both in LOADING *AND* SAVING time, the one taking the LEAST ROOM when saving – and you still get a couple of EXTRAS: a RESET button and an extensive and unique MULTI-TOOLKIT.

The summary of MICRONET tests: "MULTIFACE TWO from ROMANTIC ROBOT wins easily on all features! It is faster, more convenient, more successful, uses less space and has more facilities!"

MULTIFACE TWO SIMPLY MAKES LIFE WORTH LIVING AGAIN !

RESET ● multiface two ● STOP

MICRONET RESULTS	ACTION REPLAY	DISK WIZARD	IMAGER	MULTIFACE TWO
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Average Saving Time	[illegible]	44.5	[illegible]	32.5
Average Setting (Correction) Time	[illegible]	17.5	[illegible]	zero
Average Loading Time	[illegible]	40.7	[illegible]	19.7
Average File Size	[illegible]	[illegible]	[illegible]	49.k



Tape-to-disk at the touch of a button. Ridiculous, you may say, but it works every time. *Multiface* can stop any program in its tracks and save the program from memory to either tape or disk. It's completely fool-proof. Similar products have had problems with screen size, colour and even sound; *Multiface* can handle all these without a second thought.

That alone would have satisfied many people, but Romantic Robot has gone one step further, incorporating a memory editor. No program is safe with this: everything is out in the open, including the Z80 registers, CRTC data and any part of memory.

Don't be fooled into thinking this will result in mass piracy, however. The *Multiface* unit itself must be plugged into your Amstrad to allow reloading of a program it saved.

Multiface II must be the cleverest hardware device at present – a necessity for disk owners who thought they were stuck with loading from tape every time.

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Assembly point

One, two, this article's due; three, four, what topic would score?; five, six, let's rip off Stix! This month finds Peter Green in playful mood with another old favourite

THE first and only time that I played Stix was many moons ago on an Atari VCS games console (that's about six years ago when they were first popular, and £99.95 bought you state-of-the-art coloured blobs).

The game area is a rectangle surrounded by a pixel-wide border. The player starts with a cursor in the middle of the bottom edge of the border, which can be moved by joystick along the border, or off it into the rectangle. At this point the cursor starts to leave a coloured trail behind itself, like the old Etch-A-Sketch toy.

However, the stix (a large sprite that looks like a bundle of coloured lines, or sticks), is also floating around inside the rectangle. If it hits the trail while the cursor is still away from the border, the cursor jumps back to its original spot on the border, the trail is erased, and a life is lost.

If, on the other hand, you manage to get back to the border somewhere without being hit, the trail you have left divides the play area into two parts, one containing the stix, the other empty. At this point the game fills the empty area in blue, and calculates this area as a percentage of the original total. This figure is added to your score.

Now you are ready to strike out from the border again, leaving a new trail across the remaining unfilled area. The game continues like this, with the player filling up the play area block by block, and restricting the stix to a smaller and smaller space, until 75 per cent or more of the rectangle has been filled. Then the level is deemed complete, and a new empty rectangle is set up.

Obviously the smaller the remaining unfilled area, the harder it becomes to complete a trail without colliding with the Stix. But just to keep life interesting, a time limit is enforced by the inclusion of two Sparx. These are small sprites which start out opposite the cursor, in the centre of the top edge of the rectangle.

Looking (and acting) like the flame that travels

```
@
JP@
.KM_READ_CHAR       EQU &BB09
.KM_GET_JOYSTICK    EQU &BB24

.TXT_OUTPUT         EQU &BB5A
.TXT_WIN_ENABLE     EQU &BB66
.TXT_SET_CURSOR     EQU &BB75
.TXT_SET_PEN        EQU &BB90
.TXT_SET_PAPER      EQU &BB96

.SCR_INITIALISE     EQU &BBFF
.SCR_SET_MODE       EQU &BC0E
.SCR_SET_INK        EQU &BC32
.SCR_SET_BORDER     EQU &BC38
.SCR_DOT_POSITION   EQU &BC1D
.MC_WAIT_FLYBACK    EQU &BD19

.stix_size          EQU &0805 ;8 rows high, 5 bytes wide

org &8000

.init
CALL SCR_INITIALISE ;Set Mode 1, initialize all screen variables

XOR A               ;Set A to 0
LD HL,inks          ;Point to list of colours for the inks

.set_inks
LD B,(HL)           ;Fetch first ink colour into B
INC HL
LD C,(HL)           ;and second ink colour into C
INC HL
PUSH AF
```

```
PUSH HL
CALL SCR_SET_INK    ;Set ink in A to colour pair in BC
POP HL
POP AF
INC A
CP 16
JR NZ,set_inks      ;Loop until all inks done

LD BC,&0404
CALL SCR_SET_BORDER ;Set border magenta

LD HL,start
LD DE,HL_player
LD BC,start-HL_player ;Initializing all variables
LDIR                  ;Copy starting values into the variables

.game_loop
LD HL,start
LD DE,HL_player
LD BC,score-HL_player ;Initialize 'new game' variables
LDIR
CALL rnd_pos        ;Set stix to random position

XOR A
CALL SCR_SET_MODE   ;Set screen to Mode 0
LD HL,&0107
CALL TXT_SET_CURSOR ;Move text cursor to column 1 row 7

LD HL,&C190         ;Draw play rectangle at this screen address
LD C,4
CALL magenta        ;First do 4 rows of solid magenta
CALL hor_edge       ;Then the horizontal upper edge
CALL vert_sides     ;Then the vertical sides of the rectangle
CALL hor_edge       ;The lower horizontal edge
```

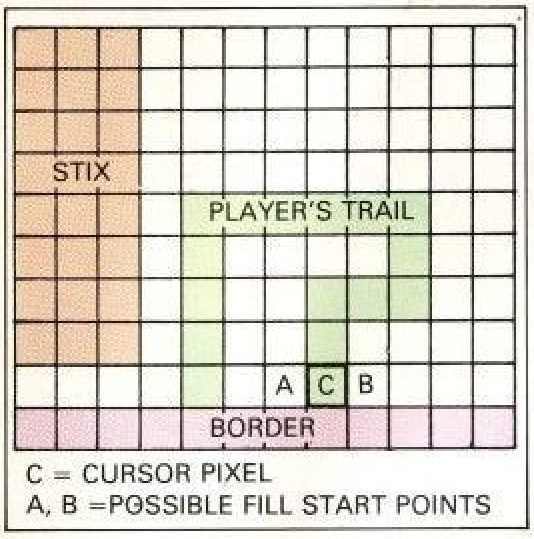


Figure I: The findstix algorithm

along a burning fuse, they move round the border and up through the trails you have left until they hit the cursor – another life lost.

Alchemy

If you read the Breakout programming feature in the August '87 *ACU* you'll remember I said that all arcade games have a similar structure at the programming level, and just to prove the point I wrote this month's Stix game by loading in the Breakout source code and editing it where necessary.

Look carefully and you'll see quite large chunks that are the same (or similar) – the main loop preceded by a frame flyback, sprite erasure, movement and re-display, the death routine, the entry points for re-trying the current level, starting a new level or starting a new game.

Also, although I haven't stressed this as strongly as Rupert Goodwins did in his August '87 article The Black Art of Programming, Assembly Point tries to present useful subroutines as stand-alone program blocks with well-defined entry and exit conditions, just like the Amstrad Firmware Manual.

This is to help you use the modules as building blocks for your own programs, the way that the high-score program from July 1987 incorporated a previously-published sort subroutine. This month, we need to dust off the fill subroutine (but in this case it can't be used as it stands, as will become obvious).

Fill routine mode

The fill actually performs a double role, helping to solve the first major programming difficulty in Stix; that is, how does the computer know which of the two areas contains the Stix? This is one of those problems which to a human is obvious at a glance, with our good spatial awareness, but is really tricky to program.

I know the Macintosh software can do extraordinary things with irregular areas, but it does use a fast 16-bit processor and algorithms that I don't have access to.

The best I could come up with on short notice was a modified fill routine. Look at Figure I, where the cursor has just collided with a border edge. Either pixel A belongs to the area to be filled, or pixel B does.

The .find–stix subroutine picks one of the points – A, say – and starts filling the background. If this is the empty region, the fill path will only encounter the border edges and the trail: it will fill the whole region as required.

However, if the fill path hits a pixel making up the stix, we're in the wrong region. The program erases the fill that it's done already, moves to point B and does the fill from there instead. This

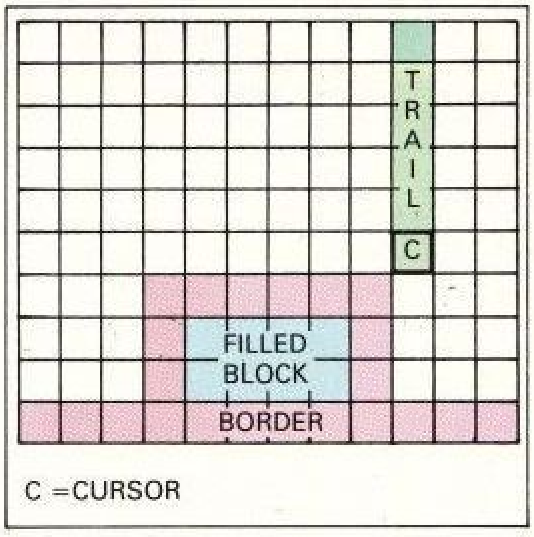


Figure II: This causes problems . . .

system for finding the stix does work, but as area filling is slow, it can take some time for this part of the program to execute.

Programming playability

The second problem I had concerned the rules governing player movement. At first I tried to program the cursor animation at one pixel per frame flyback, which gave the right sort of speed.

However, it caused a few problems. First, it's possible to draw a trail that touches itself, and this results in enclosed areas that the fill routine will miss. Second, you get interesting problems if the trail meets a border at an external corner as in Figure II.

Finally, when the cursor is adjacent to a border pixel, the collision detector needs to tell whether

```
LD C,3
CALL magenta         ;and finally go to the bottom of the screen in magenta

LD HL,&0000
LD DE,&1304
CALL TXT_WIN_ENABLE ;Set up score window
LD A,3
CALL TXT_SET_PEN    ;Select red letters
LD A,2
CALL TXT_SET_PAPER  ;on a cyan background
LD HL,screen
CALL print           ;Print the score headings
CALL print_score     ;Print the current score
LD HL,&0904
CALL TXT_SET_CURSOR ;Move cursor to 'lives' position
LD A,(lives)         ;This is a number 0-9
ADD A,&30            ;Convert it to ASCII
CALL txt_output      ;Print it

.level_loop
LD HL,start
LD DE,HL_player
LD BC,percent-HL_player
LDIR                     ;Initialize 'new level' variables

LD HL,&1002
CALL TXT_SET_CURSOR
LD HL,timer
CALL print               ;Print '30' secs

LD BC,stix_size          ;Height and width of stix
LD DE,(stix_addr)        ;Get screen address for stix
LD HL,(stix_pic)         ;and which picture to use
CALL draw_block          ;Draw the stix
```

```
LD BC,(start_C)
LD HL,(start_HL)       ;Get previous starting point
LD (C_player),BC
LD (HL_player),HL      ;Store current cursor
LD A,&3C               ;Encoded ink 6
CALL gra_plot_absolute ;Plot the cursor
LD A,&C0
LD (trail),A           ;Set trail and current plotting colour to encoded ink 1
LD (pen),A

CALL rnd_vel           ;Initialize the stix velocities to random values

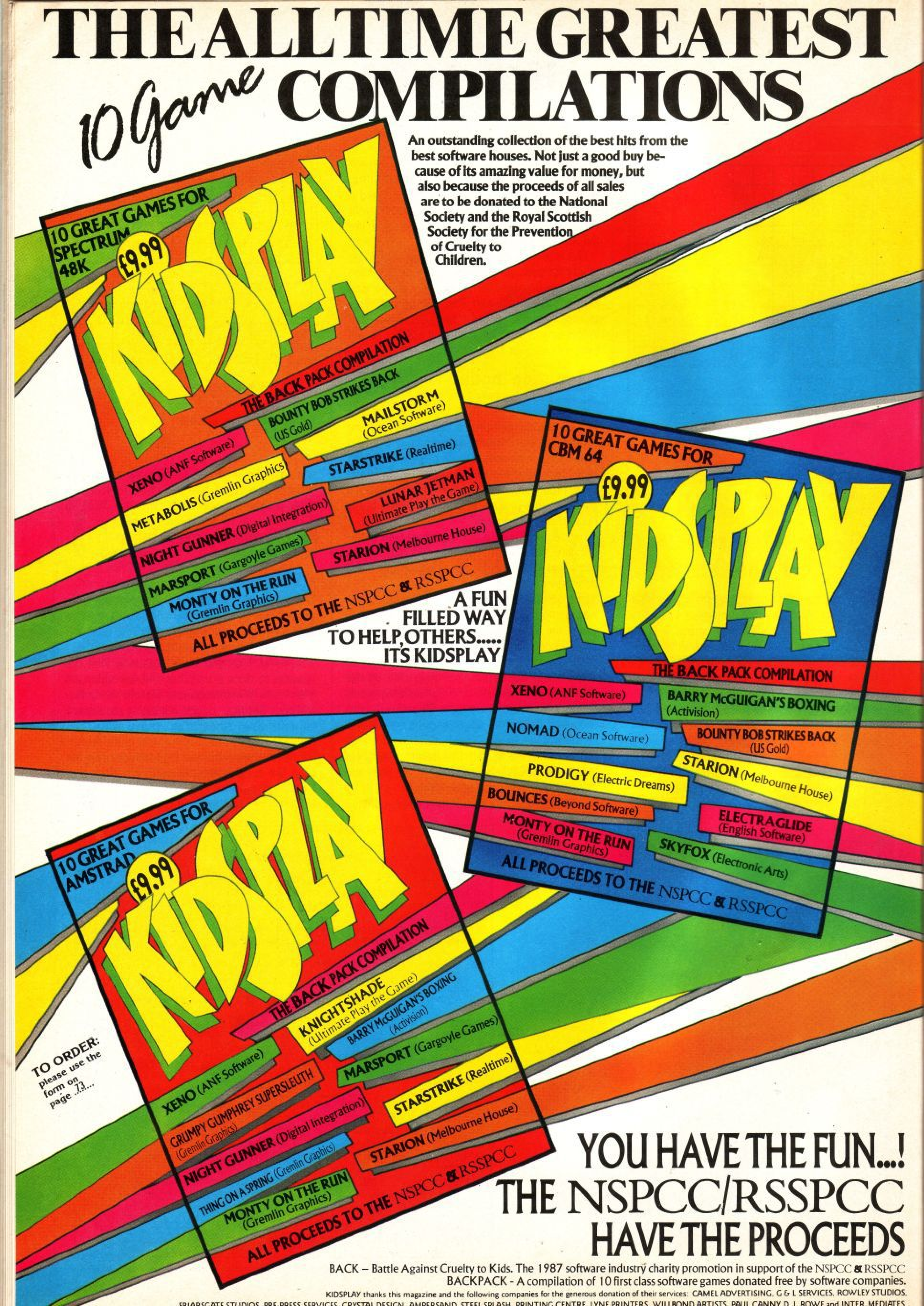
.frame_loop
CALL MC_WAIT_FLYBACK ;Wait for frame flyback so screen update is invisible

LD BC,stix_size      ;Height and width of stix
LD DE,(stix_addr)    ;Get screen address for stix
LD HL,(stix_pic)
CALL draw_block      ;Erase the stix

LD A,(mip)
OR A                 ;Is there a 'movement in progress'?
JR NZ,do_mip         ;If mip<>0, then ignore joystick as already moving

CALL KM_GET_JOYSTICK ;Read the joystick, returning status in A
AND &0F              ;Keep only the direction bits
LD HL,(player_move)  ;HL = address of required player movement routine
CALL JPHL            ;CALL the address in HL
JR NC,no_move        ;NC means attempted move invalid, so ignore

.do_mip
OR A                 ;Clear carry
DEC A                ;Decrement A, which always contains mip when get here
LD (mip),A           ;Store new value of mip
```


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you've just stepped *off* the edge (so there's no block yet to be filled) or whether you're trying to step *onto* the edge, having left a trail (so there is a block complete).

I kept finding more and more special cases that had to be tested for, the collision detector got more and more complicated, slower and slower, the sprites started to flicker...

Eventually I had a flash of insight that all the problems could be solved simply by moving two pixels at a time instead of one. To keep the cursor speed sensible we still need one pixel movement per video frame, so the variable called mip (movement in progress) is set when a move is initiated, after which the joystick is ignored until the movement is complete.

I also use mip to decide when I should be testing for collision with a border pixel (which can only occur on the second of the two pixel moves).

Sparx blown out

The third problem was one that I found insurmountable in the time available to complete this article – so the version here has no sparx. I couldn't devise a simple algorithm that would guarantee one of the sparx would always find its way to the player. This is essential, because the sparx provided the time limit for completing a level in the original game, and such a limit is required to prevent infinite loops.

For example, draw a tall, thin block up the centre of the play area, leaving a narrow gap at the top that the stix can't get through. Run round the border to the half opposite the stix, start a trail and draw a diminishing square spiral. Now the cursor can't escape to complete the block and the stix can't get through to hit the trail, so the level has "hung".

Thus my version of Stix has a simple 30 second timer instead of the sparx. A second is 50 frame flybacks in countries where the mains frequency is 50 cycles (like the UK). Amstrads running on 60 Hz mains will need 50 replaced by 60 where indicated in the source code.

In the Breakout game I used two methods of collision detection, comparing screen addresses for the ball hitting the bat, and checking a bitmap for the ball hitting a brick.

In Stix, though, we have many more elements to cross-check – the stix, the player's cursor, the fixed border, the trail, the filled and unfilled background areas – so we need a new technique.

Each type of object is displayed in a unique ink, and collisions are detected by checking ink numbers for the relevant pixels directly on the screen. Stix is programmed in the 16 colour Mode 0.

Inks are assigned as follows. The background is 0, surrounded by a border of ink 1. The stix is drawn in inks 8, 9, 10 and 11. The cursor is ink 6, the trail ink 5, and the findstix fill is done in ink 7, which on successful completion is converted to ink 2.

The reason for doing the fill this way is to make the search operation invisible on screen, by setting the displayed colours of both inks 0 and 7 to black. (Ink 2, of course, is blue). If you'd like to watch the search working, change the two zeros at the end of the first line of the inks data to, say, sixes.

In the same way, the border and trail are made to appear the same to the eye (but not the software) by setting both inks to yellow.

The finer points of Stix

Listing I gives the first half of the source code for Stix, which is somewhat longer than is usual for Assembly Point. The second half will appear next month. My usual copious comments should provide a good guide to the program's operation, but here are some of the more obscure points explained in greater depth.

First, the type of action to be performed by the player movement routine depends on whether the player has moved off the border or not. The different pairs of routines (pmove1/pmove2 for player–move, and check–done or ret–add for chk–routine) suggest that an indirect CALL would be nice. That is, the address to be called is held in a variable and can be changed as required.

Unfortunately the Z80 only allows indirect jumps; JP (HL), which jumps to the address in the HL register, and the similar JP (IX) and JP (IY). We get round this by CALLing a JP (HL) instruction, labelled JPHL, which has the equivalent effect.

Elsewhere we have a situation where a JP (DE) would be useful, but that, too, is not part of the Z80 repertoire. We can fake this one by pushing DE on to the machine stack, then doing a RET (which POPs the address off the stack and into the instruction pointer). CALL JPDE then gives indirect CALLs to (DE), and because the CALL instruction has a conditional form, such as CALL C,address (CALL address if carry set), we also get conditional indirect CALLs!

These simple, useful instruction set boosters are included in the listing to demonstrate how they work, but equivalent routines have been provided by Locomotive in the lower jumpblock. A "JP (BC)" is at &000E, a "JP (DE)" at &0016, and a JP (HL) at &001E.

The conversion of "pixels filled" to "percentage area" uses the fact that the starting play area is 151 by 153 pixels, making 23,103 square pixels. So the program scores 1 per cent for every 231 filled pixels that it counts, with any remainder from a block being held over for inclusion in the next.

Next month's article covers the fill routine, the ink conversion routines, the randomising routines and the game variables.

```
LD HL,(chk_routine)  ;HL = address of required checking routine
CALL Z,JPHL          ;If on second of two moves, check for block closure
JR C,no_move         ;and if it's closed, don't move cursor

LD BC,(C_player)
LD HL,(HL_player)    ;Else doing a move. Get old cursor coords
LD A,(pen)
CALL gra_plot_absolute ;Plot the trail colour to erase the cursor

LD DE,(rel_routine)  ;DE = address of relative movement routine

CALL JPDE            ;Calculate new coords by CALLing address in DE
LD (C_player),BC
LD (HL_player),HL    ;Store new coords
LD A,&3C             ;Encoded ink 6
CALL gra_plot_absolute ;Draw new cursor
LD A,(trail)         ;Get trail colour, which alters when move off border
LD (pen),A           ;and store as current pen colour

.no_move
LD A,(x_stix)        ;Get stix x coord
LD HL,x_vel          ;Point to stix x velocity
ADD A,(HL)           ;Add velocity to old x coord to get new x coord
PUSH AF              ;Save it
BIT 7,(HL)           ;Is x velocity negative?
JR NZ,xcol1          ;If yes, test left hand edge of stix for collision

ADD A,7              ;Else moving right, need coord of right hand edge

.xcol1
LD D,0
LD E,A               ;DE = x base coord of edge to test
LD HL,(y_stix)       ;HL = y base coord of top edge of stix
CALL SCR_DOT_POSITION ;HL = screen address, C = pixel mask
LD B,8               ;Testing the eight pixels down one side
LD DE,ret_add        ;First pixel relative movement routine is "do nothing"
```

```
.xcol2
CALL gra_test_relative
JR NZ,xcol3          ;Any non-zero ink represents a collision
LD DE,line_down      ;If pixel empty, try next pixel down
DJNZ xcol2           ;Loop to test all eight pixels
SCF                  ;Set carry to indicate "no collision"

.xcol3
POP BC               ;Fetch new x coord into B
JR C,no_bounce_x     ;If carry not set, we have a collision in x direction

CP 5
JP Z,death           ;If collision caused by hitting ink 5, dead

LD A,(x_vel)         ;Else bounce. Get the x velocity
NEG                  ;Negate it (which flips the direction)
LD (x_vel),A         ;Put back new x velocity
LD A,(x_stix)        ;Fetch old x
LD B,A               ;and move to B

.no_bounce_x
LD A,B               ;Fetch new x coord
LD (x_stix),A        ;and store it

LD A,(y_stix)        ;Get stix y coord
LD HL,y_vel          ;Point to stix y velocity
ADD A,(HL)           ;Add velocity to old y coord to get new y coord
PUSH AF              ;Save it
BIT 7,(HL)           ;Is y velocity positive?
JR Z,ycol1           ;If yes, want to test top edge for collision

SUB 7                ;Else moving down, need coord of bottom edge
```

```
.ycol1
LD H,0
LD L,A                  ;HL = y base coord of edge to test
LD DE,(x_stix)          ;DE = x base coord of top edge of stix
CALL SCR_DOT_POSITION   ;HL = screen address, C = pixel mask
LD B,8                  ;Testing the eight pixels along one side
LD DE,ret_add           ;First pixel relative movement routine is "do nothing"

.ycol2
CALL gra_test_relative
JR NZ,ycol3             ;Any non-zero ink represents a collision
LD DE,right             ;If pixel empty, try next pixel on right
DJNZ ycol2              ;Loop to test all eight pixels
SCF                     ;Set carry to indicate "no collision"

.ycol3
POP BC                  ;Fetch new y coord into B
JR C,no_bounce_y        ;If carry not set, we have a collision in y direction

CP 5
JP Z,death              ;If collision caused by hitting ink 5, dead

LD A,(y_vel)            ;Else bounce. Get the y velocity
NEG                     ;Negate it (which flips the direction)
LD (y_vel),A            ;Put back new y velocity
LD A,(y_stix)           ;Fetch old y
LD B,A                  ;and move to B

.no_bounce_y
LD A,B                  ;Fetch new y coord
LD (y_stix),A           ;and store it

LD L,A
LD H,0                  ;HL = y base coord of stix new position
LD DE,(x_stix)          ;DE = x base coord of stix new position
CALL SCR_DOT_POSITION   ;Calculate screen address of stix
LD (stix_addr),HL       ;Store it
EX DE,HL                ;Move it to DE

LD HL,&1002
CALL TXT_SET_CURSOR     ;Move text cursor to seconds position in score window
LD HL,frames            ;Get frame counter (50 frames/second on UK machines)
DEC (HL)                ;Decrement counter
JR NZ,draw_stix         ;Skip if not hit zero

LD (HL),50              ;Else reset counter (if 60 Hz mains, use 60 here)
INC HL                  ;Point to seconds count
LD A,(HL)               ;Get count
SUB 1                   ;Subtract 1
DAA                     ;using BCD arithmetic to mahe display easy

LD (HL),A               ;Store new seconds count
PUSH AF                 ;Save the flags

LD B,1                  ;Printing one pair of BCD digits
CALL print_BCD          ;Print the seconds remaining
POP AF                  ;Get flags
JR Z,death              ;If seconds count was zero, die

.draw_stix
LD BC,stix_size         ;Get stix size
LD HL,stix_pic1         ;First assume using stix picture 1
LD A,(x_stix)           ;Get low byte of stix x coord
AND 1                   ;Check if bit 0 is set or reset
JR Z,ds1                ;If reset, stix picture 1 is what we want
LD HL,stix_pic2         ;Else use other pic with stix shifted by 1 pixel

.ds1
LD (stix_pic),HL        ;Store the stix picture address
CALL draw_block         ;Draw the stix in its new position

CALL chg_vel            ;Move stix at random

LD A,(block_done)       ;Get block_done flag
OR A
CALL NZ,fill_block      ;and if it's non-zero, fill block and update score etc.

.read_keys
CALL KM_READ_CHAR       ;Anything in key buffer?
JR NC,no_quit           ;Skip if not
CP &FC                  ;Else is it ESC?
JP Z,0                  ;If so, player wants to quit - reset computer

.no_quit
LD A,(percent)          ;Get percentage of rectangle filled (in BCD)
CP &75
JP C,frame_loop         ;If less than 75%, keep playing current level
JP game_loop            ;Else cleared this level, so start game again

.death
LD B,10                 ;Come here when lost a life. Set up loop counter
```

```
.d1
PUSH BC                 ;Save counter
CALL MC_WAIT_FLYBACK    ;Wait for frame flyback (easy way of doing 1/50th sec
                         wait)
LD BC,&0606
CALL SCR_SET_BORDER     ;Turn the border red
CALL MC_WAIT_FLYBACK    ;Wait another 1/50th second
LD BC,&0404
CALL SCR_SET_BORDER     ;Turn the border magenta again (ie, flash the border)
POP BC                  ;Get counter
DJNZ d1                 ;Repeat 10 times

LD HL,&0904
CALL TXT_SET_CURSOR     ;Move cursor to lives position in score window
LD A,(lives)            ;Get number of lives
DEC A                   ;Decrement it
LD (lives),A            ;Put it back
JP Z,init               ;New game if no lives left
ADD A,&30               ;Else convert number (0-9) to ASCII
CALL TXT_OUTPUT         ;Print it

CALL chg_5_to_0         ;Erase the trail
LD BC,(C_player)
LD HL,(HL_player)       ;Get current cursor position
LD A,0                  ;Encoded ink 0
CALL gra_plot_absolute  ;Erase the cursor
JP level_loop           ;Loop back to start current level again

.print_score
LD HL,&0902
CALL TXT_SET_CURSOR     ;Move cursor to score area in score window
LD HL,score             ;Point to score (stored as packed BCD, see last month)
LD B,3                  ;Three BCD bytes to print for a 6-digit score

.print_BCD
LD A,&30                ;Put a 3 in the high nibble of A

.pb1
RLD                     ;Rotate the nibbles (described in a previous article)
CALL TXT_OUTPUT         ;Print ASCII code in A register
RLD                     ;Rotate the nibbles a second time
CALL TXT_OUTPUT         ;Print this ASCII code too
RLD                     ;A third rotation leaves A and (HL) the way they started
INC HL                  ;Point to next BCD byte
DJNZ pb1                ;Loop B times
RET                     ;and exit
.draw_block
;---------------------------------------------------
; Enter with HL = address of graphic data
;            DE = screen address of top left of rectangle
;             B = height of rectangle in pixel rows
;             C = width of rectangle in screen bytes
;---------------------------------------------------

PUSH BC                 ;Save loop counters
PUSH DE                 ;Save line start

.db0
LD A,(DE)               ;Get byte from screen memory
XOR (HL)                ;XOR it with the graphic byte
LD (DE),A               ;Put the combined byte back into the screen
INC HL
INC DE                  ;Increment both pointers
DEC C                   ;Loop width times
JR NZ,db0

EX (SP),HL              ;Get row start in HL, save HL on stack
CALL line_down          ;HL = next screen line down
POP DE                  ;Data pointer to DE
EX DE,HL                ;Swap pointers back to correct registers
POP BC                  ;Now restore height counter (and reset C for next line)
DJNZ draw_block         ;Loop until all rows done
RET                     ;Then exit

.print
LD A,(HL)               ;Ladies and gentlemen, please welcome our regular guest...
INC HL
OR A
RET Z
CALL TXT_OUTPUT
JR print
.magenta                ;Routine to plot C screen lines of magenta
LD B,80                 ;80 bytes per screen line
PUSH HL                 ;Save start of screen line

.m1
```

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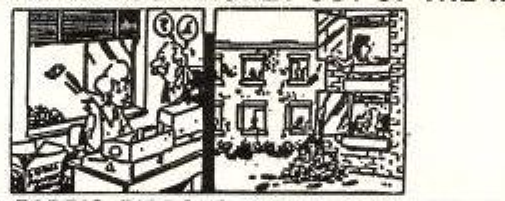
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```
LD (HL),&30      ;Store encoded ink 4 in screen byte
INC HL           ;Point to next byte
DJNZ m1          ;Loop 80 times
POP HL           ;Get screen start
CALL line_down   ;Step down a screen line
DEC C            ;Decrement line counter
JR NZ,magenta    ;Loop until C lines have been filled
RET              ;then quit


.hor_edge        ;Routine to plot top or bottom edge of play area
PUSH HL          ;Save start of line
LD (HL),&30      ;Store one magenta byte
INC HL           ;Step over it
LD B,77

.he1
LD (HL),&C0
INC HL
DJNZ he1         ;Store 77 yellow bytes
LD (HL),&90      ;Store a yellow and magenta pixel
INC HL
LD (HL),&30      ;Store a magenta byte
POP HL           ;Get start of line
CALL line_down   ;Step down a line
RET              ;and quit.


.vert_sides      ;Routine to plot vertical sides of play area
LD B,151         ;151 screen rows deep

.vs1
PUSH HL          ;Save start of line
LD (HL),&30      ;One magenta byte
INC HL
LD (HL),&80      ;One yellow pixel, one black pixel
LD DE,77
ADD HL,DE        ;Add 77 bytes to step over to right-hand side of rectangle
LD (HL),&90      ;Store a yellow and a magenta pixel
INC HL
LD (HL),&30      ;Store a magenta byte
POP HL           ;Get start of line
CALL line_down   ;Step down a line
DJNZ vs1         ;Loop 151 times
RET              ;and quit

.JPHL
JP (HL)          ;Jump to the address in HL

.JPDE
PUSH DE          ;Store address in DE on stack
RET              ;Then RETurn to this address, faking a JP (DE) instruction


.pmove1                   ;If move onto ink 0, select pmove2 for future movement
CALL pmove_com            ;Call common movement instructions
RET NZ                    ;Quit with carry clear if movement invalid

LD (rel_routine),DE       ;Store address of routine for relative movement
PUSH DE                   ;Save it
CALL gra_test_relative    ;Test pixel in required direction
POP DE                    ;Restore relative movement routine
CP 2                      ;Is pixel ink 0 or 1?
RET NC                    ;If not, quit with carry clear flagging "invalid move"

CALL gra_test_relative    ;Else test the second pixel in required direction
CP 2
RET NC                    ;Again, quit if the move is invalid

DEC A                     ;Else see if pixel was ink 0 or 1
JR Z,on_edge              ;If ink 1, still moving on edge of play area

LD BC,(C_player)          ;Else moving off border into unfilled play area, so
LD HL,(HL_player)         ;get current player position

LD (start_C),BC
LD (start_HL),HL          ;Store it as start position in case stix
hits player

LD HL,pmove2              ;Store address
LD (player_move),HL       ;of new movement routine
LD HL,check_done
LD (chk_routine),HL       ;and address of new checking routine
LD A,&F0                  ;and also store the new encoded ink
LD (trail),A              ;to plot the cursor trail in (ink 5)
.on_edge
LD A,2                    ;Set "movement in progress" (two moves to make)
SCF                       ;Set carry to flag that player can move
RET                       ;and exit
.pmove2                   ;If move onto ink 1, block is complete
CALL pmove_com            ;Call common movement instructions
RET NZ                    ;Quit with carry clear if movement invalid
```

```
LD (rel_routine),DE       ;Else store relative movement routine
LD A,B                    ;Get type of block closure (up/down or left/right)
LD (block_flag),A         ;Store current "block closed" flag

PUSH DE                   ;Save relative movement routine
CALL gra_test_relative    ;Test pixel in required direction
POP DE                    ;Restore movement routine
CP 2
RET NC                    ;Quit if movement invalid (ie not ink 0 or 1)

CALL gra_test_relative    ;Else test second pixel in required direction
CP 2                      ;Ink 0 or 1?
RET NC                    ;Quit with carry clear if not

LD A,2                    ;Else flag "movement in progress"
RET


.pmove_com                ;This chunk is the same for pmove1 and pmove2
LD BC,(C_player)
LD HL,(HL_player)         ;Get current cursor position
LD B,1                    ;Flag value for up/down block closure
LD DE,line_up             ;Address for "step up a line"
CP 1
RET Z                     ;Exit if "up" selected on joystick
LD DE,line_down           ;Address for "step down a line"
CP 2
RET Z                     ;Exit if "down" selected on joystick
LD B,2
LD DE,left                ;Address for "step left a pixel"
CP 4
RET Z                     ;Exit if "left" selected on joystick
LD DE,right               ;Address for "step right a pixel"
XOR 8
RET                       ;Quit with carry clear if last value not 8
.check_done               ;Routine to check if a block has been done (called only
LD BC,(C_player)          ;on the second move of a pmove2 movement)
LD HL,(HL_player)         ;Get player position
LD DE,(rel_routine)       ;Get direction player moving in
CALL gra_test_relative    ;Test next pixel to move onto
DEC A                     ;Decrement it
OR A                      ;Clear carry
RET NZ                    ;Quit with carry clear if not heading for ink 1

LD A,(block_flag)         ;Else get the current type of block closure
LD (block_done),A         ;Flag "block closed"
SCF                       ;Set carry to flag that player can't move

.ret_add                  ;RETurn (also used as dummy routine for
RET                       ;"no relative movement")

.fill_block               ;Modified fill routine (very fast, but specific)
LD BC,(C_player)
LD HL,(HL_player)         ;Get cursor position
DEC A                     ;Is block_done 1?
JR Z,sideLR               ;If so, check to left and right of cursor position

PUSH BC                   ;Else check above and below last cursor position
PUSH HL                   ;Save coords
CALL line_down            ;Move down a line
CALL findstix             ;See if the stix is in this area using fill
JR C,filldone             ;If stix NOT found, this is correct area to fill
                          ;and it has been filled with ink 7

CALL chg_7_to_0           ;Else undo what we've done by changing all ink 7 to 0

POP HL
POP BC                    ;Fetch cursor position
CALL line_up              ;Move to other side of line
JR find2                  ;and fill area

.sideLR                   ;Check left and right of last cursor
position
PUSH BC
PUSH HL                   ;Save coords

CALL left                 ;Move onto pixel at left
CALL findstix             ;See if the stix is in this area using fill
JR C,filldone             ;If stix NOT found, this is correct area to fill

CALL chg_7_to_0           ;Else undo what we've done

POP HL
POP BC                    ;Restore cursor coords
CALL right                ;Move to other side of line

.find2                    ;C,HL = position of second fill start
CALL findstix             ;So fill the area
PUSH HL                   ;Put two dummy values on stack to replace cursor coords
PUSH HL                   ;POPped off above

.filldone
```

```
POP HL                   ;Balance stack
POP HL                   ;Zero count of number of pixels changed
LD IX,0                  ;Change all ink 7 to ink 2 (turns filled block blue)
CALL chg_7_to_2          ;Change all ink 5 to ink 1 (turns cursor trail to edge)
CALL chg_5_to_1

PUSH IX
POP HL                   ;Move pixel count to HL
LD DE,0                  ;Zero DE
LD A,(pixels)            ;Get current "remainder" of pixels/percent
LD B,A                   ;Move to B
XOR A                    ;Zero A
.do_score
DJNZ dsc1                ;Decrement B, skip if count not zero

ADD A,1                  ;Else counted 231 pixels, so add 1% to A
DAA                      ;using BCD arithmetic
LD B,231                 ;Reset "pixels/percent" count to 231

.dsc1
SCF                      ;Set the carry to 1
SBC HL,DE                ;HL = HL-DE-carry = HL - 0 - 1, ie decrement HL
JR NZ,do_score           ;but set flags, and loop back until pixel count = 0

PUSH AF                  ;Save percent filled
LD HL,score+2            ;Update score. Point to LSB of score
ADD A,(HL)
DAA                      ;Add points to low byte of score (fifth and
LD (HL),A                ;sixth digits) using BCD arithmetic
LD A,0                   ;Store result
DEC HL
ADC A,(HL)
DAA
LD (HL),A                ;Add possible carry into third and fourth digits
LD A,0
DEC HL
ADC A,(HL)
DAA
LD (HL),A                ;Add possible carry into first and second digits

LD A,B
```

```
LD (pixels),A            ;Store left-over pixel count

CALL print_score         ;Print the new score

LD HL,&1004
CALL TXT_SET_CURSOR      ;Text cursor to percent position
POP AF                   ;Restore % filled this block
LD HL,percent            ;Point to total percentage of play area filled
ADD A,(HL)               ;Add latest percentage
DAA                      ;using BCD arithmetic
LD (HL),A                ;Store new result
LD B,1                   ;Printing 1 BCD byte (two digits)
CALL print_BCD           ;Print percentage filled

LD HL,pmove1
LD (player_move),HL      ;Now cursor is back on a border. Reset player_move
LD HL,ret_add
LD (chk_routine),HL      ;and check routine to required addresses
XOR A
LD (block_done),A        ;Reset block_done flag
LD (mip),A               ;Reset "movement in progress" counter
LD A,&C0
LD (trail),A             ;Set trail colour to encoded ink 1
LD (pen),A               ;Also current plotting colour
LD BC,(C_player)
LD HL,(HL_player)        ;Get current cursor position
CALL gra_plot_absolute;Set it to ink 1
LD DE,(rel_routine)      ;Complete the second pixel move onto the border
CALL JPDE
LD (C_player),BC
LD (HL_player),HL        ;and store the new cursor position
LD (start_C),BC
LD (start_HL),HL         ;Also store this position as new trail start
LD A,&3C
JP gra_plot_absolute     ;Plot cursor at this position in encoded ink 6, and exit
```

FIGHTIN

Jeremy Clarkson. Pacifist or Coward? Still he can't resist chopping the odd head off. Perhaps he should think seriously about teaming up with the Queen of Hearts

IT is curious but in 27 years I cannot recall a single incident where I have struck another person. Furthermore, and of rather more importance, I have never been hit either.

Even in the school playground when my knock knees and stupid hairstyle made me a prime target for the bullies, I managed to stave off whatever blows they had in mind by an alloy of good luck and good management.

This does not mean to say however that I am averse to a bit of violence every now and again. Guess who's seen The Long Good Friday 10 times and guess who's sitting here hoping and praying that the combined forces of good triumph over those jumped up upstarts in Iran with a few well chosen missiles.

Of course, as Boy George so eloquently put it: "War is stupid" but I'm afraid it's in man's nature to be a fighter, and it doesn't matter how many wishywashy pop stars wander around telling us to kiss our worst enemy, there will always be conflict, ranging from an argument between neighbours over who should mend the fence right up to full scale naval battles.

Morally dubious

Somewhere in between are a brace of computer games that I've just spent a day or two learning how to play. Both are morally dubious, both would set Mrs Whitehouse's teeth on edge, neither should be offered for sale to the under 18s but this is a computer magazine and I am not paid to wax lyrical about the rights and wrongs of chopping peoples's heads off.

The games in question are Barbarian from Palace Software and Sai Combat from Mirrorsoft. I was also asked to review the Samurai Trilogy by Gremlin Graphics Software but having failed to load the program properly, I gave up.

Basically, the program just stopped whenever I tried to tell it what language I'd prefer. Even when I gave up asking for Yorkshire and opted for English, nothing happened. The computer screen reached new heights of lethargy.

Everyone kept telling me to be patient, but even when I left it on and went to see the Living Daylights for the fourth and final time yesterday, it was still sitting on the language menu when I returned, unmoved by my apoplexic rage.

The other games were a piece of cake, though even to a software illiterate of my calibre.

We shall begin with Sai Combat where you, dressed in a natty pair of trousers which look like someone has defected in them and a headband, are asked to fight an opponent who is controlled either by the computer, in my case an Amstrad CPC, or by a living, breathing opponent with opinions and worries and BO.

Your weapons include a twig and your legs. According to the blurb on the cassette, it says Sai is an ancient form of karate which originated in Okinawa many centuries ago.

Now I don't know where the hell Okinawa is, but it's obviously populated by an extraordinarily dim breed because why on Earth should you attempt to kick your opponent or poke him with a twig when swords, even way back then, were readily available and much more dangerous. I mean, if I was apprehended by a gang of muggers brandishing a few pieces of foliage, I would not be unduly concerned, but if they had swords, I'd trot out the autobank pin number pdq.

Joystick out

It's like boxing today. If I were in the ring and the other guy was causing me so much as a thimble full of discomfort, I'd kick him in the fork, of that you can be sure.

However, accepting that you stick by the rules, you can still have fun. You're supposed to play with a joystick, but I gave up because the damn thing was so sensitive, I was forever ducking just when I wanted to poke the other guy in the face, or running away when he was down.

Eventually I discarded it and used the keyboard instead, which is a lot more satisfactory. Pushing a lever at 43.78674 degrees is a hit and miss affair. Pressing the D is not. If the other guy is standing in the right place and you press D, he

G GAMES

will get a jab in the ribs.

If he's standing in the right place and you try to execute the manoeuvre with a joystick, there's a better than evens chance he'll be treated to the spectacle of you doing a backwards somersault which, though safe, is about as handy as sending an agroaphobic astronaut out on a space walk.

The best move is called a roundhouse. Providing the combatants' feet are just overlapping, you can depress Z and your guy will swivel round and kick his opponent in the chin.

Resilient faces

In those godawful Bruce Lee films the noise that resulted from such an impact was akin to the sound you'd get if you dropped a JCB into the hold of an empty supertanker. In Sai Combat, it's more like putting a lit cigarette in a glass of water. Neither are realistic.

You win the fight by kicking or poking your opponent enough to eliminate his chi levels. All I can say is that these characters must eat a lot of barley sugar because in one bout, I used both feet to kick a guy in the face eight or nine times in quick succession and still he got up again.

Playing the computer is an entirely different ball game. So different, it isn't a ball game at all.

Once you've defeated the man in round one – the White Belt section – you move up to the yellow belt and so on until you're up against the Ninjas at black belt level.

How do I know this? Because I read it, that's how.

In reality, I never made it beyond the grey area before the opponent found my weak spot. I never know what button to press when I'm being poked in the nipples, so I just have to look gormless till my breasts are black and blue and my energy levels are exhausted.

I've played a few computer games in my time but Sai Combat went straight in at number one. The skill required is hard to acquire, the graphics are excellent and there's no long wait between games or bouts. That's a boon.

There's a long wait for everything in Barbarian. The sound track is shocking and the graphics are as concise as a cotton bud.

However, it is even better than Sai Combat.

In essence, it's much the same, with you versus either the computer or you versus another pathetic earthling. Largely, I play the computer because humanoids are no match for my brilliance.

Rather than using twigs, the fighters have swords. Points are accrued by using them to draw blood from your opponent, from kicking him, which is great fun when he's on the ground, or, as a piece de resistance, chopping his head off.

Gory goblin

Yes, if he's not watching what's going on properly, you can spin round and with an almighty swoosh, lop his head off. Blood gushes from the severed neck, the carcass tumbles to its knees and then to the ground as you stand, sword held aloft, legs splayed awaiting the arrival of a little goblin who kicks the head off the screen and drags the body away.

If you can kill all your opponents – and they get better and better as time goes by – you get to rescue the princess who is depicted on the cover by saucy soaraway Sun page three girl Sharon O'Dimbo.

I could kill the first four attackers by rolling them in the corner and slicing, over and over and over again, at their legs until all their lives were used up, but man five was a problem.

He could kick his way out of this situation with ease, and boy, could he think fast. While I pondered the keyboard, wondering how to poke him next, he could puncture me seven or eight times.

This is worrying but not entirely surprising. You see, if men were quicker thinkers than machines, then jet fighters, spaceships and even cars would still be whizzing about with valve-powered radios and navigators sitting in the back playing with slide rules.

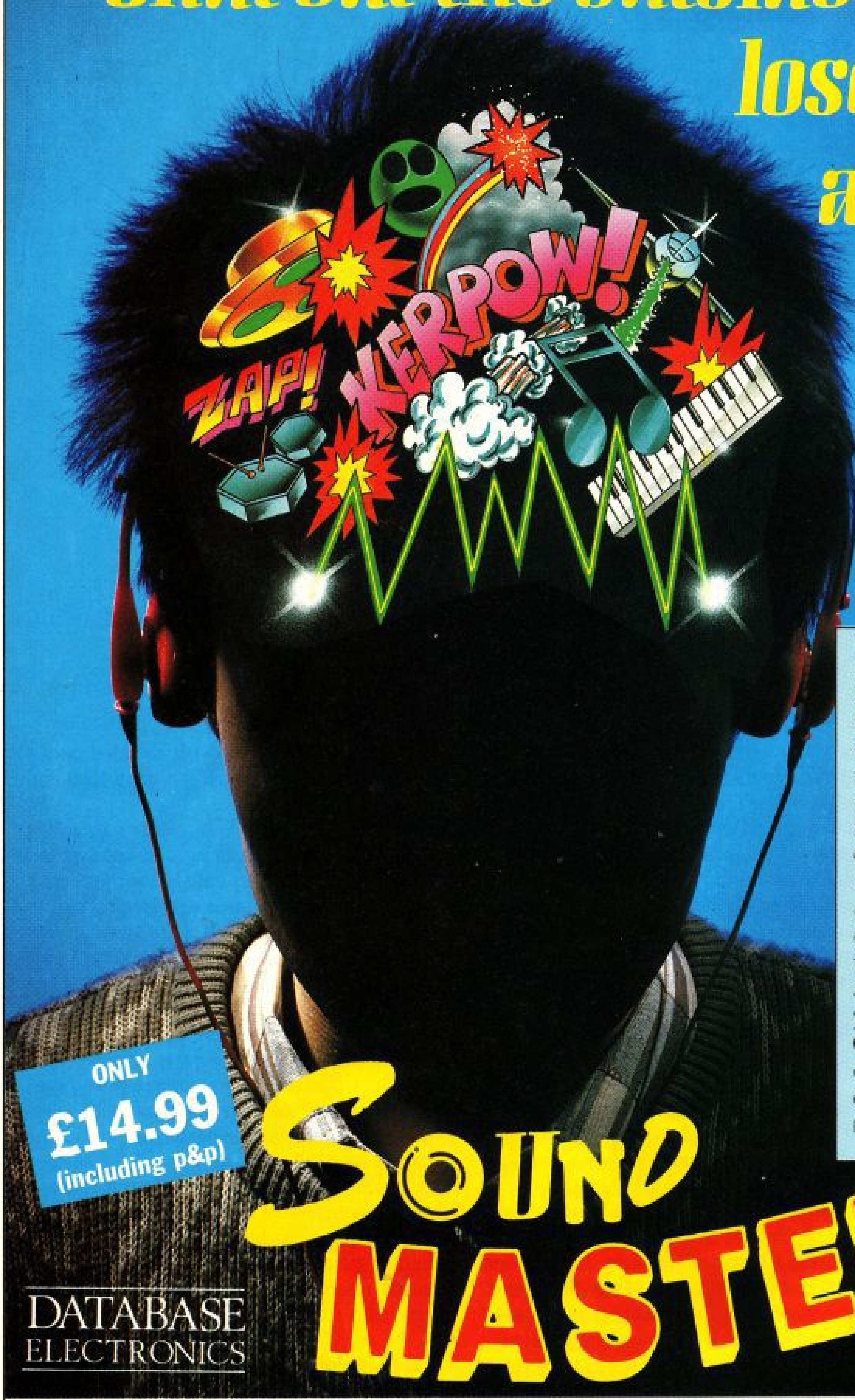
One day I will beat him, but as I write, I haven't been able to fathom out quite how. I mean, this guy not only kicks but I even caught him head butting me on one occasion. Good lord, I bet he would resort to scratching and biting if I gave him half a chance.

The sound effects are delightful. I would not have believed it possible for an electronic tool to accurately produce the sound of a severed head bouncing across the floor, but the squelches and thuds are all there, usually drowned out by the players' uproarious laughter, but there all the same.

Equally funny is the sound of skull against skull in the head butt mode and I particularly liked the metallic clang when sword hits sword.

So, am I warped for enjoying these televisual feasts of unrestrained barbaric violence? You betcha.

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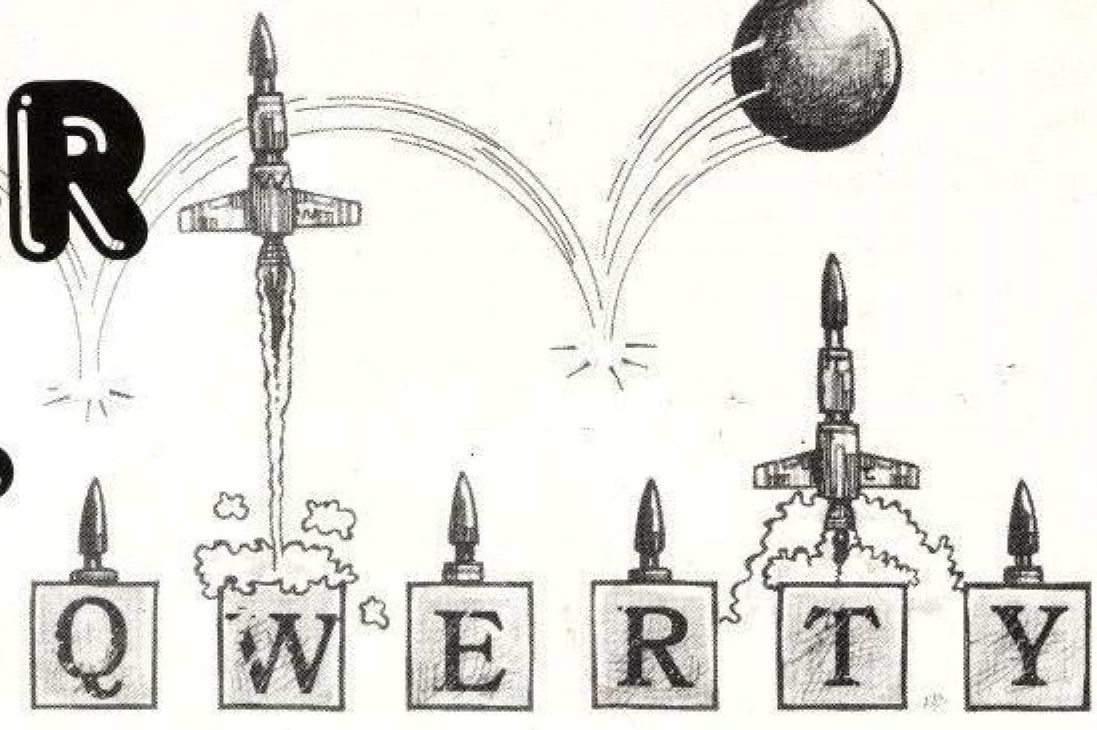
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A216

SUPER BALL



IT'S time to test your typing skill. Pressing a key will launch a missile from the silo whose code name is the same as the key you've pressed.

To make things difficult the code names change every two seconds. What's more there is a time limit of 20 seconds – you must get one ball at least in that time. Happy typing.

VARIABLES

sc	Score
hi	Hi Score
lev	Difficulty
bx,by	Ball's position
bxa,bya	Ball's direction
ins	Missile base number
mx,my	Missile's position
mi	Missile launch flag
mi=1	Missile launched
mi=0	No missile
t	Time

PROGRAM BREAKDOWN

1030-1060	Set inks, draw missile bases, ent's and env's
1070-1090	Define characters
1100-1160	Define variables and wait for a key
1170-1270	Main loop
1280-1300	Print score
1310-1330	Explosion
1340-1360	Set codename
1370-1390	Game over
1400-1430	Print instructions and time
1440-1460	Data for characters

```
1000 REM **********************
1010 REM SUPER BALL by S.H.KIM
1020 REM **********************
1030 'INITIALISE
1040  MODE 0:BORDER 1:INK 0,1:INK 1,18:I
     NK 2,26:INK 3,6:INK 4,11:INK 5,24:I
     NK 6,2:INK 7,0,26:INK 8,0
1050  PEN 1,0:LOCATE 1,3:PRINT " SC
        HI":FOR i=22 TO 25:LOCATE 1,i:PR
     INT STRING$(20,143);:NEXT:FOR i=2 T
     O 18 STEP 4:LOCATE i,22:PRINT " ";:
     NEXT
1060  ENT -1,100,10,1:ENT 2,15,-1,10:ENV
      2,15,-1,10:ENT -4,2,10,1,2,-10,1
1070 'DEFINE CHARACETERS
1080  FOR i=255 TO 244 STEP -1:READ r1,r
     2,r3,r4,r5,r6,r7,r8:SYMBOL i,r1,r2,
     r3,r4,r5,r6,r7,r8:NEXT
1090  ball$=CHR$(233):mi$=CHR$(149):DIM
     ex$(3):ex$(1)=CHR$(255)+CHR$(254)+C
     HR$(253)+CHR$(252):ex$(2)=CHR$(251)
     +CHR$(250)+CHR$(249)+CHR$(248):ex$(
     3)=CHR$(247)+CHR$(246)+CHR$(245)+CH
     R$(244):t$=CHR$(207)+CHR$(207)
1100 'SET VARIABLES
1110  IF hi<sc THEN hi=sc
1120  t=-1:lev=5:sc=0:bx=INT(RND*16+3):b
     y=INT(RND*13+5):bxa=INT(RND*3)-1:by
     a=INT(RND*3)-1:ka$="     "
1130  IF bxa=0 THEN IF RND>0.5 THEN bxa=
     1 ELSE bxa=-1
1140  IF bya=0 THEN IF RND>0.5 THEN bya=
     1 ELSE bya=-1
1150  FOR ins=1 TO 5:GOSUB 1340:NEXT:GOS
     UB 1400:GOSUB 1290
1160  IF INKEY(47)<>0 THEN 1160 ELSE EVE
     RY 100,1 GOSUB 1360:GOSUB 1410
1170 'MAIN LOOP
1180  EI:DI:FOR i=1 TO lev:a$=INKEY$:ins
     =INSTR(ka$,UPPER$(a$))
1190  IF ins<>0 AND a$<>"" AND mi=0 THEN
      mi=1:mx=ins*4-2:my=21:SOUND 1,100,
     90,5,,1:GOSUB 1340:IF sc>0 THEN sc=
     sc-1:GOSUB 1300
1200  IF mi=1 AND mx=bx AND my=by THEN G
     OSUB 1310:GOSUB 1430
1210  IF mi=1 THEN PEN 6,0:LOCATE mx,my:
     PRINT " ":my=my-1:IF my>4 THEN LOCA
     TE mx,my:PRINT mi$ ELSE mi=0
1220  IF expl<>0 THEN IF expl=5 THEN WIN
     DOW exx,exx+1,exy,exy+1:CLS:expl=0:
     WINDOW 1,40,1,25 ELSE expl=expl+1
1230  NEXT i
1240  LOCATE bx,by:PEN 5,0:PRINT " ":bx=
     bx+bxa:by=by+bya:IF bx=1 OR bx=20 T
     HEN bxa=-bxa
1250  IF by=5 OR by=20 THEN bya=-bya
1260  IF dead=1 THEN dead=0:LOCATE mx,my
     :PRINT " ":GOTO 1110
1265  LOCATE bx,by:PRINT ball$;
1270  GOTO 1180
1280 'PRINT SCORE
1290  LOCATE 15,3:PEN 1,0:PRINT USING"##
     ##";hi;
1300  LOCATE 5,3:PEN 1,0:PRINT USING"###
     #";sc;:RETURN
1310 'BALL EXPLOSION
1320  sc=sc+10:GOSUB 1300:SOUND 2,400,15
     0,15,2,2,10
1330  expl=1:LOCATE bx,by:PEN 0,0:PRINT
     " ":LOCATE mx,my:PRINT " ":WINDOW b
     x,bx+1,by,by+1:FOR i=1 TO 3:PEN i+1
     ,1:LOCATE 1,1:PRINT ex$(i);:NEXT:WI
     NDOW 1,40,1,25:mi=0:exx=bx:exy=by:b
     x=10:by=7:bc=6:RETURN
1340 'PRINT LETTERS
1350  LOCATE ins*4-2,24:PEN 1,0:PRINT CH
     R$(143):k$=CHR$(INT(RND*25)+65):IF
     INSTR(ka$,k$)<>0 THEN 1340 ELSE MID
     $(ka$,ins)=k$:PEN 8,1:LOCATE ins*4-
     2,24:PRINT k$:RETURN
1360  FOR ins=1 TO 5:GOSUB 1340:NEXT:GOS
     UB 1420:RETURN
1370 'GAME OVER
1380  EVERY 0,1 GOSUB 1360:dead=1:mi=0:L
     OCATE 6,8:PEN 7,0:PRINT "GAME OVER"
     :LOCATE mx,my:PRINT " ":LOCATE bx,b
     y:PRINT " ":SOUND 4,100,100,10,,4,3
     1:dead=1
1390  IF INKEY(47)<>0 THEN 1390 ELSE LOC
     ATE 6,8:PEN 0,0:PRINT SPACE$(9);:RE
     TURN
1400  LOCATE 5,19:PEN 7,0:PRINT "PRESS S
     PACE":RETURN
1410  LOCATE 5,19:PRINT SPACE$(11);:GOSU
     B 1430:RETURN
1420  t=t+2:IF t<20 THEN PEN 1,0:LOCATE
     t,1:PRINT t$;:RETURN ELSE GOTO 1380
1430  t=-1:LOCATE 1,1:PEN 1,0:PRINT SPAC
     E$(20);:RETURN
1440  DATA &30,&00,&04,&03,&02,&02,&07,&
     07,&00,&00,&c0,&80,&06,&7c,&e0,&c0,
     &0f,&1b,0,0,0,0,0,0,&fc,&84,&f0,&80
     ,0,0,0,0
1450  DATA 0,0,0,0,&0d,&0d,&18,&08,0,0,0
     ,&0c,&f8,&80,&1c,&3c,0,0,&04,&0f,&0
     7,&04,&06,0,0,0,&78,0,&70,0,0,0,0
1460  DATA 0,0,0,0,&30,&30,&20,&30,0,0,&
     0c,&70,0,&2,&2,&2,&30,&20,&30,&38,&
     18,0,0,0,&02,&02,&0e,&08,&f8,0,0,0
```

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INTERNATIONAL KARATE

TYPICAL scenes from a reviewer's life, as he tries to enter the state of mind needed to run a martial arts program. This state is Dhyana (Zazen in the Japanese), when you are mindful of good and bad, but remain unaffected by feelings of love or aversion.

Only, after a row of six of the naffest games yet to cross Dunhackin's threshold, my exact mental condition is more likely to approximate to Po-Rij (Jap. Sushi), a subtle combination of rage, boredom and deadline leading to enlightenment in the nearest pub.

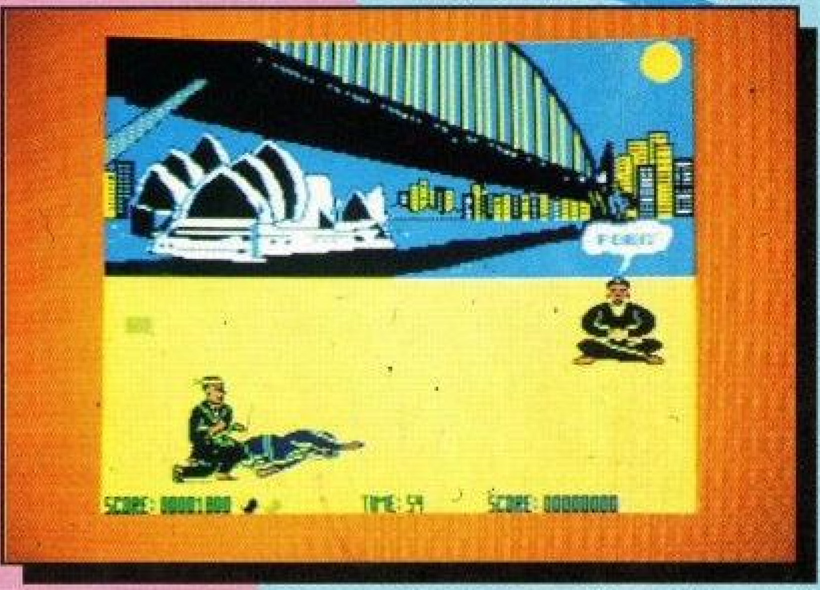
It takes a game of staggering originality and superlative execution to shake me from that state.

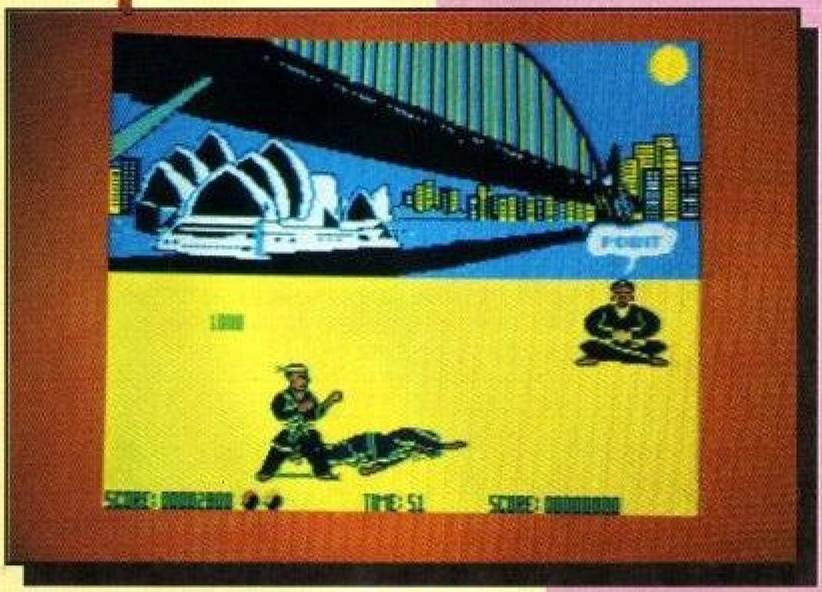
Guess what sort of game International Karate is? There's a clue in the title, but not in the first word. And it's nothing to do with Atrake, that popular Usbekistanian pastime not too similar to tiddlywinks. It is, in fact, a game of karate.

On the off chance that you've never seen a karate game, nor yet read a review, here is the thrust. Upon your visual display unit appear three figures, offset against a background of pyramids, skyscrapers or similar visual cliche.

So, if you were wondering about the significance of the International in the title, you can relax. Ponder no more. Another of life's lesser mysteries has been lain conclusively to rest.

Take up your joystick. Make upon it joysticklish movements. One of the three figures will respond by jumping about. This figure is your figure. Cease your stick manipulation. A second figure will advance across the screen and proceed to beat your figure senseless in a surprisingly short time.





This figure is your opponent. Upon your figure becoming unconscious, the third and final figure will pronounce a judgement as to the state of play. This figure is the Wise Old Judge. He never gets beaten up, or indeed has to move at all. Which explains both epithets.

If you so desire, a friend can control your opponent, and you can both do it on the keyboard. It's true, I've tried it. And whoever gets to win also gets to break a large pile of tiles, using only his head.

This is only possibly true. I haven't tried it. And then it's on to the next jetsetting international backdrop for a repeat performance.

Regardless of the liberal use of the impersonal third person pronoun, that is that. The sleeve notes contain what is possibly the worst example of adspeak I've yet ridiculed.

Atop four screen shots showing the enrobed protagonists balling fists at each other is the legend "..And you thought you'd seen a karate game..". Presumably, some mistake it for Space Invaders, chess or a spreadsheet.

And then there's the subtler oxymoron on the spine – "Perfection is the only accepted standard" – if a standard isn't accepted then it isn't a standard. Or am I waffling again...?

Unfortunately, in this somewhat limited review, there is no room to explore the finer philosophical points of Karate. Bear in mind the overriding objective, that of beating seven sorts of Hades out of the other chap.

And a final word. Wombats.

Author: Endurance
Price: £2.99

Nigel

WHEN I commented to the Ed that this karate game was exactly the same – not similar – as others I knew, he opined that it would be amusing to run a test to see if anyone could tell them apart in a blind run.

I think that would be as exciting as a tap water tasting competition. Meanwhile, like I said, IK is exactly the same as any other karate game.

The graphics might be marginally better, but joystick control, action and animation are... sorry, I can't go on. I've just fallen asleep. ZZzzz.

0/20

Colin

IT'S a small world. Archer Maclean, who wrote International Karate – although he was not responsible for the Amstrad conversion – went to the same school as Roland Perry and other Amstrad people.

This is perhaps the most difficult Karate game I've played – the enemy is very savage from level one. So if you are the kind of person who regularly beats the wotsit out of karate games this is for you, unless you want to wait for International Karate II.

14/20

Liz

I'D have thought that by now the world would have tired of Karate games, everyone having at least one title in their collection. And yet more make it to the shelves.

Perhaps because the life of a game is limited, no-one would be seen dead buying a game which was six months old – unless it was a classic like Elite – it is fair game to tart up an old idea and trundle it out again.

Just as every Five Star single sounds the same, every Karate game looks the same. It's competent.

16/20

FREDDY HARDEST



Be warned. Drink was nearly the finish of Freddy Hardest, the rootingest-tootingest Space Ranger this side of the Pleidies. It was after one of his "little parties" – gate-crashed by an obnoxious little oik – that Fred went for a little ride in his spacecraft. Unsurprisingly, he had a little crash.

To escape back to home and another party a spaceship must be hijacked. The satellite on which things happen is divided into two parts, outside and inside the alien base. The second part is loaded separately from tape and needs a password from the first stage.

The first stage is the simpler: The only thing that Freddy needs to do is massacre a few aliens and make his way across chasms, water, holes and other landscaped features.

All the xenobiological entities encountered fall into one of two distinct galactic groups. Those that can be killed by shooting, and those for whom a good kick does the business.

Mr Hardest has both his laser pistol and his right foot to hand, and he's certainly not shy to use them both – joystick down and fire to laser, up and fire to kick.

The aliens float, creep, pounce and rush on to Freddy, who needs some wrist-snapping joystickery to keep them out of the way as he advances left to right.

On the menu: Avoidois, Antopids, Koptoi,Snakkers and others. All deadly, but some are faster on their tentacles than others. And there's a model of a robot that floats along above ground level – not so bad unless you need to leap on to a floating island right in the middle of their flight path.

Found the password? On to part two, and the spaceships. There are four spaceships hiding away. To use one of them Freddy has to get the Captain's Code, the energy modules and the instructions for hyperspace from the alien base in which he finds himself.

He also finds a new and even less amicable selection of aliens to deal with.

Gabarda Robots – "cold as steel" says the blurb, but then what would you expect from machines – can move much faster than you'd like them to.

Micro sounders sit there until you blunder by, and there are, not too surprisingly, The Inhabitants. A strange halfbreed, immune to laser fire, these need to feel Freddy's toes before letting him pass.

The instructions Freddy needs can be found by interrogating computers whose terminals are scattered hither and thither. He has to get the right codes for the ships, but everything is thoughtfully colour coded for his operating convenience. Greenscreeners will need felt-tips.

This is another game where making a map helps a lot. To make it past the second stage, you have to know where you're going and what you're going for, otherwise the sheer mass of alien lifeforms can bring you down.

Speed is of the essence. The first stage is more your basic zap – and – slay epic kickeroonie. Something for everyone? I should imagine that Imagine imagines so.

Author: Ocean/Imagine
Price: £8.95

Nigel

IT isn't often since The Incident that I've seen the Ed burble. But he burbled as he handed me Freddy H. "Everyone likes it", he smiled – an unnerving sight.

And I must say I see what they mean, as some pretty swish – not to say big – things happen on-screen. Like Saracen, it's difficult to put one's digit on the exact reason for the general feeling of a good game, but FH has it. It also has infinitely superior graphics.

I would have liked to see a little more ingenuity in the design of the end part of the game, but still. 'S good enough.

17/20

Liz

A GREAT game. I fear that once completed it will lose much of its appeal, but at least there is a lot of time to be spent playing it.

I'll pass the access code for level two on to the Hairy Hacker in a month's time. Until then it's you, space, and the aliens. Odd, they aren't really the aliens since it is their planet. You are the visitor.

16/20



Colin

THOSE spaniards really know their DEC HL from their LD A,3. This is the game which sits in the office Arnold's cassette deck and gets summoned to provide succour in times of stress.

Shoot a few robots, kick the odd alien and having to hang around developing rooms at strange hours waiting for screen shots does not seem so bad.

Cute sprites, very playable without taking anything too seriously.

18/20

ROAD RUNNER

I'VE always suspected that Road Runner is deeply Zen in concept. But then I'm weird. If there's anyone on the planet who's within eyeshot of a TV and has never watched Wile E Coyote strap an Acme rocket to his back and fly into a cliff then my name is Guggenheim. I said I was weird.

Let's play pretend. Pretend you are Atari Coin Op Inc, and your close links to Warner Bros *(like being owned by them – Ed)* have got you the rights to do the computer version of the cartoon of the chase.

How would you do it? Lots of running about, of course...

In fact that just about sums it up. Guide Road Runner through a series of progressively more difficult road conditions – starts off as M25 and ends up with potholes the size of Alan Sugar's petty cash fund – as your arch enemy WEC uses progressively sillier machines to catch you.

To expand the excitement to aneurism point you can also gobble up little piles of seeds as you meep-meep your way around. Moreover, if you should omit to ingest five groups of grain in a row you become faint and lose a life – a similar fate awaits should the doggone dog catch you.

And he has a magnet, which has a fatal attraction should you consume some kernels with added iron. One way to pull the birds, I s'pose.

Cast back your mind to the TV cartoon. Remember the bit where Wile chased his prey into a tunnel, and was just about to follow when a certain sound is heard?

Wile turns to camera with a look of utter despair, his ears fall, followed in close formation by the rest of him as a truck/train whooshes out of the shaft. Well there are trucks here too. You dodge them, and try and persuade Wile to hit them. He gets blasted, you get more points.

The same is true for Acme Mines, which are studded about in various places in the game. You hit 'em, scrub a life. He hits 'em, bonus. It's quite simple. It's also the same for crevasses and boulders. Two legs bad, four legs good.

Now what would you imagine the delightfully appellated Tongue Bonus is? OK, I know what you at the back are thinking of. Too much Leather Goddesses . . . This is a kid's program/me.

If you hang around, and let Coyote nearly catch you, as you pull away the Runner's tongue comes out in a universal gesture of contempt. And you get more points. Hence tongue bonus.

Of course, there is the terrible risk that he will catch you and drag you back to the beginning of the screen.

Ummm... would you believe invisible paint? Again, the story is simple. You get the paint, you get invisible, you get hard to catch and you get more points. If the Coyote gets the Dulux invisimulsion then none of the above are true.

Apart from the lemonade – guess what part this beverage plays in the scheme of things – that's about all, folks.

Author: US Gold
Price: £9.95



Liz

I DIDN'T like the Atari system one arcade game. I felt it underused the hardware which also gave us Paperboy and Marble Madness. So US Gold didn't have much to go on. What it has done is quite good.

The gameplay, what there is of it, is well reproduced. The graphic border is pretty but there lies the rub – the area within it is too small to p[illegible] the game on. I disliked the way [illegible] cut back to the beginning of the section when killed.

12/20

Colin

This is a tiresome game to play. Bits of it are good, but other aspects are frustrating. The arcade game had a track ball – running through the maze is more difficult with keys or a joystick and I often got stuck and caught.

Coyote runs too slowly early on, so you need to stop and wait for him. If he goes off the screen the beast picks up a rocket.

I think it was a mistake to try and convert this game, but what has been done is good.

10/20

Nigel

THE only good things about the arcade version were the splendid graphics and sound. Almost like the real thing. This adaptation is faithful to the arcade original, except it junks the graphics and sound.

This game is a rip-off, pixel like. The action takes place in a small box, with tiny multicoloured sprites flickering about. If you didn't know who they were supposed to be, you'd have trouble guessing.

And there's no real panache, no stylistic humour of the sort that made the cartoons so irresistible. What a pity.

By the way, the number of trademarks on the sleeve must break some kind of record. Did you know that BEEP BEEP!! was a trademark of Warner Bros?

8/20



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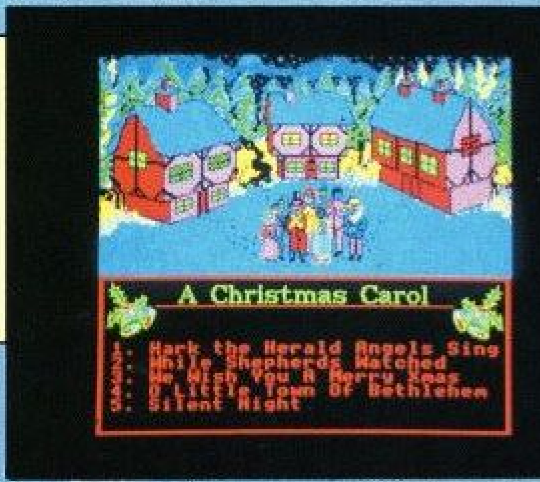
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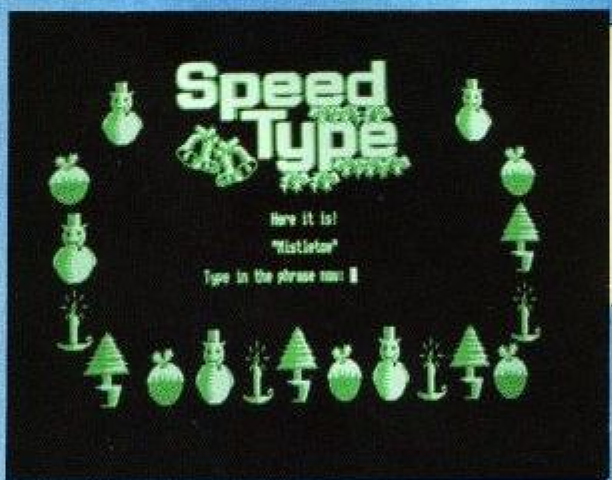
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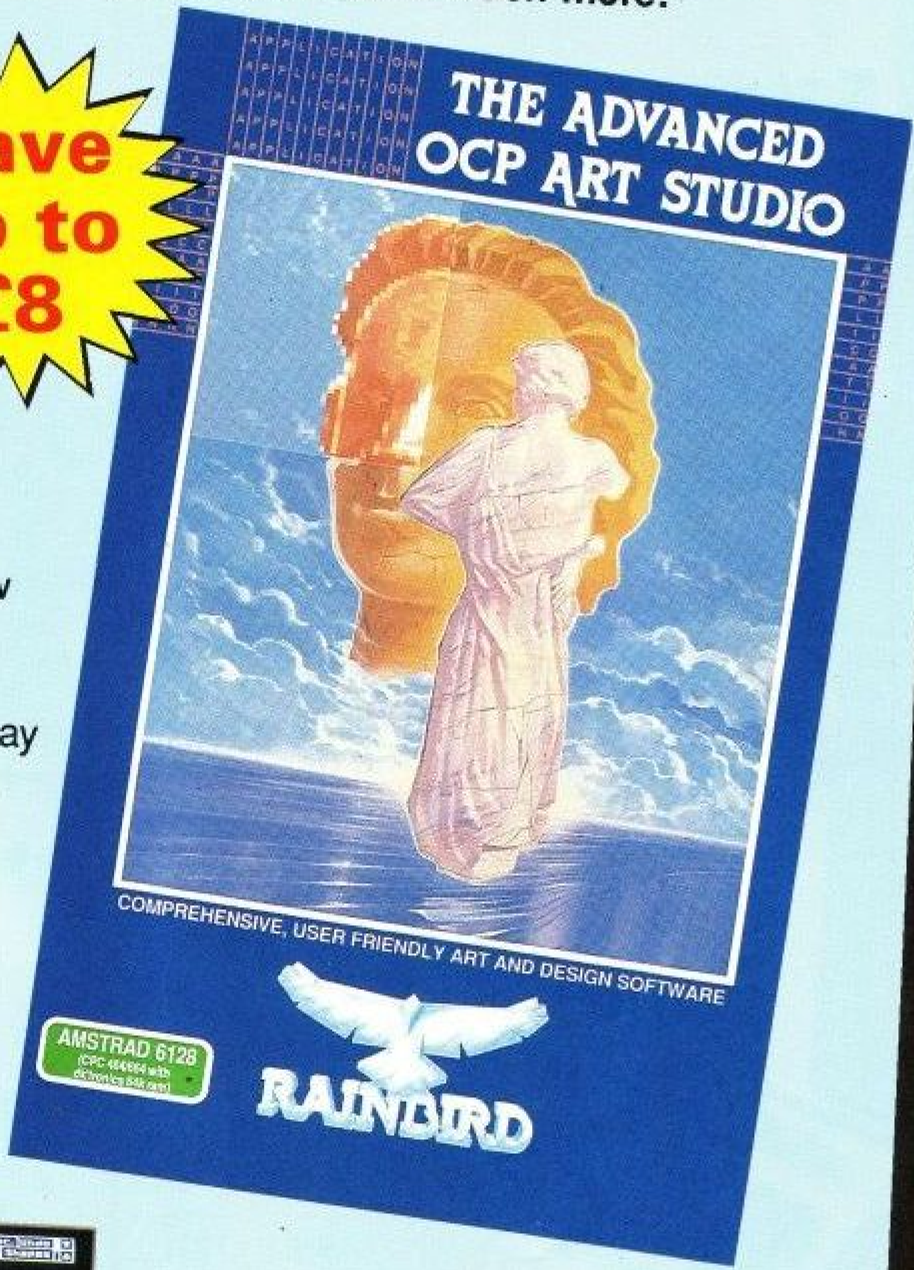
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March: Nemesis preview, Music Machine – the ultimate Sound peripheral. Making the most of Protext, Machine Code manipulation, Elite Disc hack, background print spooler and US Gold interview.

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The Least Significant Bit

In place of our usual barbed-tongue offering, LSB is a place for a poetic interlude. But this is a poem which should tug at the heart strings of anyone who programs in C.

A C man's lament

The problem I find when I'm looking at lines
Of programs all written in C,
Is that the syntax and grammar resemble the stammer
Of a dyslexic demoralised bee.

I'll bet any man here (I'll wager a beer),
Can't guess how to copy a string,
The mess is dramatic, all [
. & _ !

Pointers collected, and thrice indirected,
Collated in STRUCTs and compiled.
When traced by debugger can make codes shudder
And conditionals drive a man wild.

I don't wish to seem bitchy, but if only old Ritchie
Had been strangled at birth by a nurse.
And the fate that I've planned for all Kernighan's clan
Is unprintably several times worse.

I find that the pain begins with the MAIN
The only way out is to hack it.
The one bit of syntax that keeps my mind intact
Is the very last }.

I hope that this ode is clearer than code
I write in that monstrosity.
You might think that Pascal's a bit of a rascal
*But the ultimate ba*d is C.*

My program is calling (in structure appalling)
I must finish my poetic plea.
But, let's all fact it, use FORTH, LISP or BASIC
Whatever you do, don't use C.

Translator's guide to pronunciation:

[= open square bracket
. = dot
& = ampersand
_ = underscore
! = pling
} = close curly bracket
* = star

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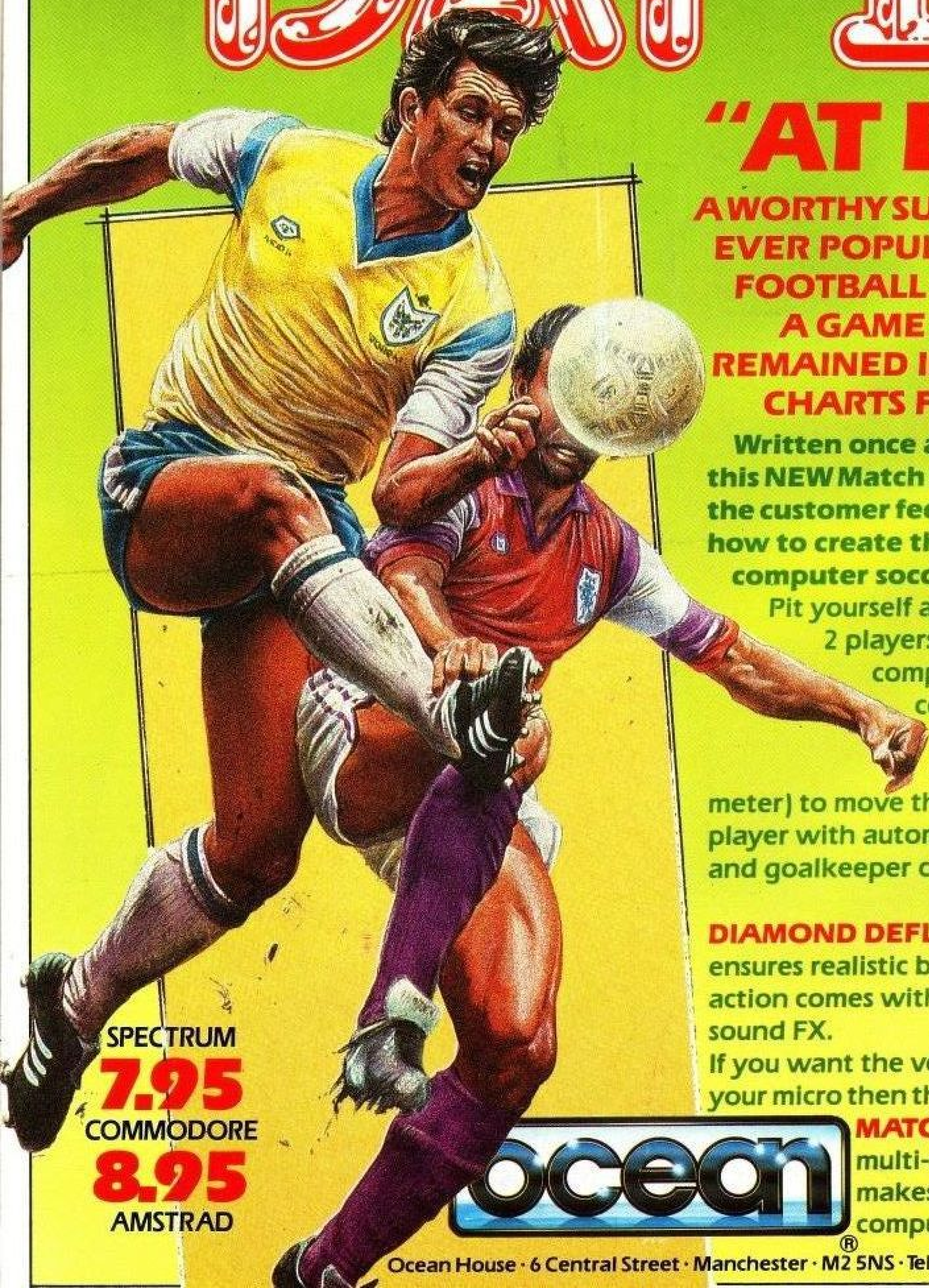
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